AN ARGUS SPECIALIST PUBLICATION
No. 95
Jan 15-21, 1985
45p

HOME Computing WEEKLY

Win four games from SUPERIOR SOFTWARE
Choose your own prize!

Gallup software chart
The chart to believe in

Get to know the Amstrad CPC464
Part one of an exciting new series

Join the peace women at Greenham Common — on your Beeb

Masses of software reviews for: Spectrum C64, TI-99/4A, Oric

Buffing up on 4

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on page 5

Talk of the show

[illegible] and its new [illegible] is [illegible] ing [illegible] com [illegible] Vegas [illegible] tari on [illegible] brand new [illegible] XE [illegible] the well [illegible] like [illegible] Lau [illegible] "Power wi [illegible]

ntinued on page 5

SUPERIOR SOFTWARE
FOR THE COMMODORE 64
SMUGGLER
SUPERIOR SOFTWARE
PERCY PENGUIN
Travel with... Trashman
New Generation Software

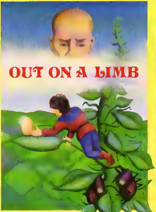
Great games to type in for: TI-99/4A, Atari, VIC-20, C64, Spectrum

COMMODORE C16 AND PLUS 4

LAS VEGAS

MOON BUGGY

FLIGHT PATH



ZODIAC

3D TIME TREK

SKRAMBLE

TURBO FAST LOADER

LAS VEGAS Las Vegas brings all the challenges of a deluxe arcade fruit machine direct to your fingertips Many exciting features include gamble cancel collect nudge and number options with a three row display and maximum payout of 20$
K B Only C 16 £6 95

ZODIAC This is an enthralling arcade adventure in which the evil powers of hell have scattered the signs of the Zodiac in the four hundred chambers of the abyss Struggle to collect these signs and at the same time try to annihilate everything in your way How long can you stay alive?
J S or K B C 16 £6 95

PETCH Race Petch around the screen moving ice blocks to alter the maze however beware of the nasty monsters who are constantly chasing Petch as you attempt to collect the bonus cherries Also if you can touch the edge of the maze the monsters will suddenly burst into flames but look out they ll soon be back!
J S or K B C 16 £6 95

MOON BUGGY You must skillfully manoeuvre your jumping patrol vehicle over dangerous moon craters as well as large boulders and cunningly placed mines Not only this but avoid the hovering alien spaceship as it bombards you from above.
J S or K B C 16 £6 95

3D TIME TREK As sole survivor of the planet Corillian your quest is one of anger and revenge The starship you are flying is full of the latest inboard computers and extra powerful sensors Also included are full 3D graphics to add unbelievable realism to this fantastic journey through time itself and beyond.
J S and K B C 16 £6 95

SKRAMBLE Earth has been overrun by the Cobrons and its up to you to battle through the six ferocious and testing sectors Adversaries include meteors UFO s and deadly fireballs Fly through an armoured city then an elaborate maze and finally the command base itself
J S or K B C 16 £6 95

FLIGHT PATH Flight Path is without doubt the best flight simulator on the C/16 and Amstrad The many elaborate features include Altometer flaps directional headings crosswinds fires, ground warning lights and reverse thrust to name but a few Also included are smooth graphics as you take off cruise over mountains and land once again
J S and K B C 16 £6 95

OUT ON A LIMB This is a fantastic and in parts outrageously funny game Based on the fairytale of Jack and the Beanstalk Out On A Limb is full of the most strange and eccentric characters you are ever likely to meet Firstly climb the stalk and jump onto the clouds then enter the giant s castle searching for treasures However watch out for vacuum cleaners musical notes televisions and potted plants all of which chase you round the many and elaborate rooms of the castle Once the treasure is collected the single exit will be opened and then ?
J S or K B C 16 £6 95

ANIROG

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Home Computing WEEKLY

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HOME COMPUTING WEEKLY
BRITAIN'S BRIGHTEST

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Readers: we welcome your programs, articles and tips.

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PROGRAMMERS

WE ARE LOOKING FOR TOP QUALITY PROGRAMMES TO MARKET IN THE UK AND ABROAD. THE PROGRAMMES MUST BE OF TOP QUALITY AND IN MACHINE CODE WITH GOOD GRAPHICS AND SOUNDS AND ORIGINAL CONCEPT. WE ARE LOOKING FOR PROGRAMMERS TO CARRY OUT WORK ON NEW MACHINES SUCH AS THE C16, MTX, AMSTRAD AND M.S.X. WE CAN SUPPLY THESE MACHINES TO CARRY OUT WORK FOR MIRAGE. WE ARE ALSO OFFERING £500 PRIZE FOR THE BEST PROGRAMME RECEIVED BY THE END OF FEBRUARY 1985 WHICH WE WILL DECIDE TO MARKET. WE OFFER AN OUT RIGHT PAYMENT OR [illegible] PLUS PAYMENT OF 20% ROYALTIES. FOR MORE INFORMATION CONTACT THE SOFTWARE MANAGER HE WILL BE GLAD TO LISTEN TO ANY QUESTIONS YOU MAY HAVE.

PROGRAMS COMING SOON

THE COUNTS CASTLE

COMMODORE 64

£6.95

CASTLE GREYSKULL

48K SPECTRUM

£5.95

SALES MANAGER
T.C. SAPHIER

SOFTWARE MANAGER
C.A. SAPHIER

NOTE WE HAVE MOVED TO NEW PREMISES

Talk of the show

Continued from front page

price' they have amazing graphics and incredible speed.

The basic model is the 65XE and is expected to sell for less than $120 in States. It's based on the 800XL model but with much greater capability.

If music is your hobby the next model in the range will probably be your choice. The 65XEM has a built-in music synthesiser and other features — all for less than $160.

The portable XEP has a built-in 5in black and white monitor and a 3½in disc drive unit. All these models have 64K of RAM but the top of the range 130XE boosts this to 128K. The good news for Atari owners is that existing 800 software can be used with the new machines.

The machines in the ST range are described as 16-/32-bit personal computers and there are two models to choose from. Model 130ST has 128K and the 520ST has 512K of RAM. In order that these may be seen as complete systems, the company plans to launch a full range of peripherals, including 3½in disc drives, printers and RGB monitors.

One of the printers is expected to be a colour dot matrix non impact type. These machines are based around the 68000 Motorola processor, like the one used in the Apple Macintosh and in the same family as the processor in Sinclair's QL. The operating system will support ikons, windows, a real time clock and a two button mouse.

Buffing up on 4

Continued from front page

Sinclair QL. The benchtests have been devised so that the speed differences can actually be seen by the viewers.

Another first, for Channel 4 at least, is the projected broadcast of software during the test card. The first of these broadcasts will be on Tuesday 12 February, lasting for 30 minutes. The suggested schedule is between 10 and 10.30 am, repeated between 11 and 11.30 the same morning.

Each broadcast will be for just one machine, kicking off with the BBC. Users will be able to tape the audio tones and then load the recording into their computers.

Other machines to be covered are the Amstrad, CPC464, Commodore 64 and Spectrum.

A weekly Modem Corner will be presented by Ben Knox. This will give modem users plenty of ideas for extending their use and there will be demonstrations of online databases both in Britain and overseas. Ben will also be in charge of a free bulletin board set up through Prestel Gateway service.

Those who don't subscribe to Prestel, but who have a 1200/75 modem will be given a special demonstration password and user number so they can access the bulletin board without incurring any connection or other charges. The total cost will be the price of the phone call.

This service will be held on the Nottingham Building Society mainframe computer which runs all its Homelink services. The content of the board hasn't been decided as it will depend entirely upon what users want it to cover.

Spare ZX81s should be safe until 8 February when you'll find out how to turn it into a mobile trundle cart. This project, designed by Robin Moorshead, will be available as a kit from Maplin Electronic Supplies complete with instructions.

HCW has been invited to watch the recording of the first programme and in a forthcoming issue we will be reporting on the problems and pleasures of producing a television programme for computer users.

All change!

Home Computing Weekly has a new Editor, Dave Carlos. Those who read the magazine from cover to cover might have noticed the change on the Contents page. Paul Liptrot remains as Consultant Editor but has moved on to Computer and Software Retailing, a weekly trade magazine, full time. Dave has been writing for the magazine for two years right from issue 3 and has been a BBC and Sinclair user for even longer.

There are a number of changes to be made to the magazine in response to both the new Editor and the recent reader survey. We are always pleased to receive letters from our readers and if you have any ideas, suggestions or comments we would like to read them, so please drop us a line. Please don't ring the office with your queries since we can't answer them over the phone and we can deal much more quickly with written problems.

If you are an avid games player we would like to read about your high scores on your favourite games — both those printed in HCW and those you have bought. We would even welcome photos, passport size, and are hoping to have a readers' page with both the scores and photos. If you are the best galactic fighter or frog preserver on your street let us know.

Home Computing Weekly, No 1 Golden Square, London W1R 3AB

Hopalong Acorn

In the latter half of 1985 Acorn intends to have its new Communicator micro 'hopping' on to the busy executive's desk.

Acorn is currently developing a machine which is a convergence of the technology from intelligent phone systems and computer terminals. Imagine it — just one foot on the desk instead of two.

The machine is not likely to be based on any of Acorn's current homes or projected business machines. These all have the BBC's 6502-based main board operating as input and output processor with second processors taking all the number crunching.

The machine is expected to compete directly with ICL's new One Per Desk.

Both products have a phone linked to the processor via a communications modem. This allows rapid exchange of information from desk to desk even though they might be physically miles apart. All that is required is a telephone line.

Full specification of the new machine hasn't yet been released and price is still being considered. According to a spokesperson for Acorn: "The machine will be competitively priced. It will be cheaper than the ICL and have more functions".

This could become the micro which hops and bops instead of runs and runs.

Acorn, Fulbourne Rd, Cherry Hinton, Cambridge

Commodore extras

Here's an item which could come in handy for Commodore C16 and Plus/4 users — a joystick convertor which enables you to use any nine pin D plug joystick.

Euromax is the company behind the product, and new releases from this company include a C16 interface which can take any CBM 64/VIC-20 compatible cassette recorder, and the new Supreme joystick, for use with the Atari, Commodore, BBC, Einstein and QL.

Euromax, Pinfold Lane, Bridlington, N Humberside YO16 5XR

It's in the bag

Ever fancied taking your micro to the match on a Saturday afternoon?

Lightening may have just the answer for you. This distributor of both hardware and software has put together a special pack of goodies with the packaging as one of the selling points.

For the seemingly reasonable sum of just £259.99 the new Commodore user gets not only the C64 machine but also the C2N cassette unit, joystick, reference guide and two software packages, Simon's BASIC and International Soccer. This entire pack will be sold in a sports bag ready for you to carry off.

You may have to show a fast turn of speed to get hold of one though, as the offer is strictly limited.

Lightening Records and Video, 841 Harrow Rd, Harlesden London NW10 5NH

Sounds familiar?

So you thought you'd seen the last of endless references to the year 1984? Well, maybe you have — but here's 1985. It's Mastertronic's latest for the Commodore and although the title is new, the plot sounds familiar.

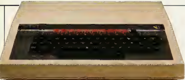
You guide a spacecraft through a number of caves to collect nuclear plasma. Then you make your way to the last, most difficult cave where you pick up the fusion core.

Finders Keepers is a new Spectrum title from Mastertronic. This is a platform game in which the magic knight must prove his worth in order to be accepted as a member of the polygon table.

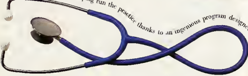
Two new titles for the Spectrum are Formula One Simulator and Chiller, which has now been converted from the Commodore.

Mastertronic, Park Lorne, 111 Park Rd, London NW8 7JL

The BBC Micro is only 16″ long. But it stretches indefinitely.

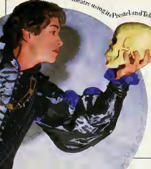


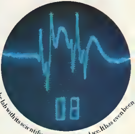
It stretches into schools where BBC Basic and the Econet networking system have helped make it Britain's number one

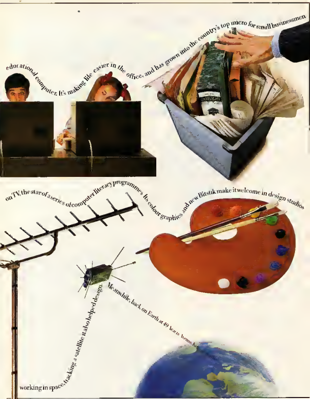


It's down at the doctor's, helping run the practice thanks to an ingenious program designed by two GPs. You'll catch it

It can take you to the theatre using its Prestel and Teletext adaptors. While helping out at the lab with its scientific monitoring interface. It has even been






educational computer. It's making life easier in the office, and has grown into the country's top micro for small businessmen
on TV, the star of a series of computer literacy programmes. Its colour graphics and new Bitstik make it welcome in design studios
working in space, tracking a satellite it also helped design.
Meanwhile, back on Earth at 49

The BBC Microcomputer System. The world's best. And still growing.

The BBC Microcomputer System is designed, produced and distributed by Acorn Computers Ltd.

Superior selection

Pick your own prizes from 19 of Superior Software's games

IF YDU own a BBC, Electron or Commodore 64, then this week's competition is for you We're giving 25 readers the chance to expand their games collection by winning four games from Superior Software's range.

If you're a winner you will be able to choose from 19 of Superior s titles listed on this page All the programs are worth £7 95 except Draughts and Reversi for the Electron which cost £6 95 A quick bit of mental arithmetic will tell you that your prize could be worth over £31

Galaxy Birds for the BBC is a fast action version of the popular arcade game You face hostile creatures armed only with your laser There are three initial screen formations and at first the birds swoop individually As the game progresses they join forces 'Superb sound effects and graphics', according to Superior

Fruit Machine for the Electron has all the traditional features including hold nudge and gamble and there are spinning reels and multiple winning line According to Superior this game has it all with realistic fruit and authentic sound effects It's just the game for the gambler who doesn't want to risk his money

Smuggler for the Commodore 64 puts you on the wrong side of the law You must catch the barrels and throw them on to your ship There are 12 screens and the graphics include kangaroos, octopuses, penguins, birds biplanes, fork lift trucks, conveyor belts, lifts and walkways

This is just a taste of what you could win With such a wide choice we're offering something for everyone

To enter just locate the Superior Software titles hidden in the word square They are all taken from the list of prizes When filling in your entry coupon, remember to write in your choice of four games and the type of computer you own

Good hunting and good luck!

How to enter

Study the wordsquare and mark all the Superior titles you find with a ball point or semi opaque felt tip pen Complete the coupon clearly and fully — if you are a winner it will be used as a label Send the wordsquare and coupon to us **Important** write the number of Superior titles you found on the back of the envelope

Send your entry to Superior Competition Home Computing Weekly, No 1 Golden Square London W1R 3AB Closing date is at first post on Friday February 1, 1985

Superior Software Prizes

BBC

Galaxy Birds
Invaders
Space Fighter
Centibug
Road Racer
Frogs
Lost City Adventure
Gideon's Gamble
Fairground

ACORN ELECTRON

Fruit Machine
Constellation
Disassembler
Draughts
Reversi
Chess

COMMODORE 64

Percy Penguin
Chess
Draughts
Smuggler

SUPERIOR SOFTWARE
LIMITED

You may enter as many times as you wish but each entry must be on an official coupon — not a copy — and sealed in a separate envelope

Prizes will arrive from Superior Software within 28 days of the publication of the issue containing the results of the competition

The rules

Entries will not be accepted from employees of Argus Specialist Publications Superior Software and Alabaster Passmore & Sons This restriction also applies to employees families and agents of the companies

The How to Enter section forms part of the rules

Superior Competition

Entry Coupon

Name ______________________

Address ______________________

____

____

______________________ **post code** ____________

Number of titles found ______________________

Type of computer ______________________

Choice of four prize games ______________________

____

____

____

Complete clearly and fully — if you are a winner this will act as a label for your prize Post to Superior Competition Home Computing Weekly No 1 Golden Square London W1R 3AB Closing date first post Friday February 1 1985 Don't forget to follow clearly the advice in the How to Enter section including writing the number of titles found on the back of your envelope

D	B	R	L	M	N	I	O	O	U	P	Z	X	L	M	H
L	R	O	A	D	R	A	C	E	R	O	E	E	T	T	K
M	R	A	A	B	E	T	E	R	D	M	U	N	I	J	C
V	U	N	U	P	O	R	I	L	R	T	D	V	E	E	D
A	R	B	O	G	L	I	A	V	K	N	I	B	N	E	L
T	B	O	N	A	H	G	O	R	A	I	B	T	U	I	L
G	T	B	O	A	N	T	T	S	S	B	I	S	S	R	N
A	E	L	N	I	B	D	S	A	M	B	C	D	A	L	V
P	E	R	C	Y	P	E	N	G	U	I	N	D	R	A	O
N	I	E	B	A	B	A	D	G	G	X	L	Y	Y	R	D
A	N	V	L	B	F	A	I	R	G	R	O	U	N	D	G
O	U	E	G	H	H	V	A	A	L	I	B	U	N	S	T
D	D	R	I	N	Z	Z	P	A	E	R	D	D	L	S	T
T	O	S	A	U	I	O	E	F	R	O	G	G	Y	B	D
L	O	I	N	D	S	F	F	E	A	D	K	V	T	S	I
B	D	K	I	J	L	M	N	I	O	A	B	D	L	R	S

More than a toy

If you're looking for something more from your Spectrum than games, you may find the answer in Mini Office, from Database Publications. Converted from the BBC, both versions cost £5 95.

The package comprises four modules — word processor database, spreadsheet and grapics, and the Spectrum version includes additional features.

Commodore and Amstrad versions are planned for January, and a standard feature is a 32-page operating guide.

Database Publications, Europa Hse, 68 Chester Rd, Hazel Grove, Stockport SK7 5NY

Checkmate — in 3D

The QL has suffered from a shortage of software, and in particular games software But now you can play 3D chess on the QL. The game costs £19 95 and has impressive graphics

Released by Psion, the program was written by Richard Lang and has a comprehensive array of analysis commands There are eight levels of problem solving and 28 levels of play, so that you can pick your standard, whether you're a novice or a champion.

Cursor keys or joystick are used to control movements, and you have the choice of a two-player game or an exhibition match You can save to Microdrive or print out your game history.

Although the shop price is £19 95, QLUB members can buy their copy for £14 95.

Sinclair Research, Berkeley Sq Hse, London W1X 5LB

Get on down

If you've never been supple or athletic enough to breakdance, you could fulfil your ambition in the warmth of your own home No cold heads or sore limbs — you can just make believe on your Commodore

Interceptor Micros has announced Break Fever, for the Commodore 64. Use your joystick to do the turtle, back slam and head spin. Electronic funk music sets the atmosphere, while on the reverse side you can listen to the music and perhaps try out the real thing.

Break Fever costs £7, while Heroes of Karn, now available for the Spectrum, costs £5 50.

Interceptor Micros, Lindon Hse, The Green, Tadley, Hants

Spectacular graphics in QL Chess

FLOYD
FLOYD
FLOYD
FLOYD 40

Floyd 40 printer

Spectrum add-on

The Floyd 40 printer is claimed to be the first Spectrum-compatible printer with built-in intelligence Features include three print modes, inverse printing, interface 1 and 11 compatible, double height and double width printing and 32 or 40 columns

The Floyd 40 connects to your Spectrum via a 56-wave ribbon cable, while all connections are brought through to the back

Included in the purchase price of £79 95 (plus £4 95 p&p) is a free roll of paper and an instruction manual

Floyd 40, 153 Merrion Rd, Dublin 4, Ireland

Cricket capers

CRL's Test Match is now available on the Amstrad CPC464, with enhanced graphics, according to CRL. You have the choice of a two innings per side test match or a one day limited over contest

Choose your teams or construct your own line-up Price £6 95

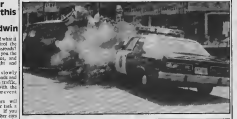
CRL, CRL Hse, 9 Kings Yard, Carpenter's Rd, London E15 2HD

Survey winners

Here are the names of the 50 winners in our HCW survey which appeared in issues 80 and 81 C F Brown, Leeds Garry Sharp, Derby, W L Copely Rochford B Morris Rochdale, Carol Johnson Framley A Irwin Bicester Andrew McDowell, Glasgow Alan Fairfield Stoke on Trent D Porter, Rochford, Mark Metcalf Littlehampton, D Barnes, Birmingham, Rui Andrade Luss J S Dunning, Oldham, Kevin Clancy London Alistair Macdonald, Cheshire, Mary Hesling, Daunot David Wylde, Ripley, C Cox Havant A Voris York Stuart Broster, Tadley, Kevin Ringrose Brixworth, Glenn Spencer, Hitchin, Benny Gonsalves London, K A Scott Rainham Keith Clark, London, Gordon Bell, Troon James Fletcher, Buxton, Andrew Holtum, PFPO 39 C Bennett, Woodford Alan Mayers, Thornhill Tony Jones, Benfleet J R Crosby, Wallsend Steven Booney, Laindan Lee Copping, Colchester A Copely, Aldershot, J H Bryan, Nottingham, Richard Speed, Burgess Hill M L Stanley, Portsmouth Joseph Chester, Birmingham, Ishmael Phansons, London, W Middlebrook, Beeston G Klarzynski Manchester, G H Austin Smith, Forres S Alderson, Loughborough, Paul Anciaux, Leuven Russ Knowles North Luffenham, Mike Lambert, Swansea J K Boudire Wokingham Peter Laycock, London John Marshall, Cardiff

Traffic cop

You'll need all your wits about you to avoid crashes. You're in control — or are you? in this game by Graham Baldwin



Have you ever wondered what it would be like to control the traffic at a busy crossroads? This simple game gives you the opportunity to find out, and will test your foresight and reactions to the limit.

Four cars are slowly approaching the crossroads and your job is to stop the traffic, one lane at a time, with the cursor keys to prevent collisions.

Periodically the cars will accelerate, making your task a little harder each time. If you allow a collision the other cars will stop briefly to enjoy the spectacle, then resume at their old speed, or slightly less if they were travelling at more than 20mph.

The game ends after 10 crashes, when the highest traffic speed and best speed so far are displayed.

You'll be doing well if you can keep the traffic running at 30mph but the cars have a theoretical maximum speed of 126 mph, which should keep even dedicated button-pushers on the hop.

Variables

SP	speed of cars
CR	number of crashes
CT	counter for increasing speed
BST	best speed so far

How it works

140	clear screen
150	set sprite magnification
160-170	sub program calls
190	set variables
200-210	sub program calls
220-240	check for crash and number of crashes
250	scan keys
260	counter for speed increase
270-300	stop cars if key is pressed
330-410	end of game
420 560	define characters
570-600	set colours
630-770	instructions
780-1010	place graphics on screen
1020 1090	place cars on screen
1100-1220	explosion when cars crash
1230-1290	increase speed of cars

Hints on conversion

As this program uses sprite graphics it cannot be directly converted to other computers without these facilities, unless you wish to use machine code. If you want to try conversion here are some TI Extended BASIC statements for reference.

CALL SPRITE (sprite number, character code, colour code, start row, start column, row velocity, column velocity) places a sprite on the screen and starts it moving.

CALL MOTION (sprite number, row velocity, column velocity) sets or alters the motion of a sprite.

CALL DELSPRITE (sprite number or ALL) removes sprites from the screen.

CALL SUBPROG(VARIABLE) transfers control to a user written sub program with optional variables transferred between the main and sub programs.

```
100 REM     *TRAFFIC COP*
110 REM
120 REM GRAHAM BALDWIN 1984
130 REM
140 CALL CLEAR
150 CALL MAGNIFY(3)
160 CALL GRAPHICS
```

```
170 CALL INSTRUCTIONS
180 CALL CLEAR
190 SP=8 :: CR=0
200 CALL SETUP(SP)
210 CALL CARS(SP)
220 CALL COINC(ALL,H):: IF H THE
N CALL CRASH(CR)ELSE 250
230 CALL SOUND(-100,1000,5)
240 IF CR>9 THEN 320 ELSE 210
250 CALL KEY(3,K,S)
260 CT=CT+1 :: IF CT>75 THEN CAL
L FASTER(CT,SP,BST)
270 IF K=83 THEN CALL MOTION(#1,
0,0)ELSE CALL MOTION(#1,0,SP)
280 IF K=68 THEN CALL MOTION(#2,
0,0)ELSE CALL MOTION(#2,0,-SP)
290 IF K=69 THEN CALL MOTION(#3,
0,0)ELSE CALL MOTION(#3,SP,0)
300 IF K=88 THEN CALL MOTION(#4,
0,0)ELSE CALL MOTION(#4,-SP,0)
310 GOTO 220
320 CALL CLEAR
330 DISPLAY AT(6,1):"YOU CAUSED
10 CRASHES, WITH"
340 DISPLAY AT(9,1):"THE TRAFFIC
 RUNNING AT"
350 DISPLAY AT(10,1):SP;"MPH"
360 DISPLAY AT(12,2):"BEST SPEED
 SO FAR IS ";BST;"MPH"
370 DISPLAY AT(16,6)BEEP:"PLAY A
GAIN? (Y N)"
380 CALL KEY(3,K,S):: IF S=0 THE
N 380
```

```
390 IF K=78 THEN END
400 IF K<>89 THEN 370
410 CALL CLEAR :: GOTO 170
420 SUB GRAPHICS
430 CALL SCREEN(2)
440 CALL CHAR(128,"FF10101010101
0FF")
450 CALL CHAR(129,"818181FF81818
181")
460 CALL CHAR(130,"0101010101020
4F8")
470 CALL CHAR(131,"8080808080402
01F")
480 CALL CHAR(132,"1F20408080808
080")
490 CALL CHAR(133,"F804020101010
101")
500 CALL CHAR(136,"000000FFFF")
510 CALL CHAR(137,"1818181818181
818")
520 CALL CHAR(96,"000000007FFFF3
F3F3F3FF7F0000000000000000FFFE1F
1F1F1FFEFF")
530 CALL CHAR(100,"00000000FF7FF
8F8F8F87FFF0000000000000000FEFFC
FCFCFCFFFFE")
540 CALL CHAR(104,"0B0F0F0F0F0C0
C0C0F0F0C0C0F0F0F07D0F0F0F0F0303
030F0F03030F0F0F0E0")
550 CALL CHAR(108,"070F0F0F0C0C0
F0F0C0C0C0F0F0F0F0BE0F0F0F03030F
0F030303F0F0F0F0D0")
560 CALL CHAR(112,"01416333F3F1
F1F1F1F3F7BE3830301008183C6EEFCF
CF8F8F8FCFC9E0701")
570 CALL COLOR(13,16,2,14,16,1)
580 FOR I=2 TO 9
590 CALL COLOR(I,16,1)
600 NEXT I
610 SUBEND
620 SUB INSTRUCTIONS
630 DISPLAY AT(10,8):"TRAFFIC CO
P."
640 DISPLAY AT(12,2):"DO YOU WAN
T INSTRUCTIONS?"
650 DISPLAY AT(15,11)BEEP:"Y N"
660 CALL KEY(3,K,S):: IF S=0 THE
N 660
670 IF K=78 THEN CALL CLEAR :: G
OTO 750
680 IF K<>89 THEN 650
690 CALL CLEAR
700 DISPLAY AT(4,2):"USE THE ARR
OW KEYS (ESDX)"
710 DISPLAY AT(6,3):"TO STOP THE
 TRAFFIC AND"
720 DISPLAY AT(8,1):"PREVENT COL
LISIONS. WHEN TEN"
730 DISPLAY AT(10,3):"CRASHES HA
VE OCCURRED YOU"
740 DISPLAY AT(12,2):"WILL BE RE
MOVED FROM DUTY."
750 DISPLAY AT(18,4):"PRESS ANY
```

```
KEY TO PLAY."
760 CALL KEY(3,K,S):: IF S=0 THE
N 760
770 SUBEND
780 SUB SETUP(SP)
790 DISPLAY AT(4,1):"TRAFFIC"
800 DISPLAY AT(6,5):"COP"
810 DISPLAY AT(4,21):"SPEED"
820 DISPLAY AT(6,20):SP:"MPH"
830 DISPLAY AT(20,1):"TI-99/4A"
840 DISPLAY AT(20,21):"CFASHES"
850 CALL HCHAR(9,1,128,32)
860 CALL HCHAR(15,1,128,32)
870 CALL VCHAR(1,13,129,24)
280 CALL VCHAR(1,19,129,24)
890 CALL VCHAR(1,14,32,120)
900 CALL HCHAR(10,1,32,160)
910 CALL HCHAR(9,13,130)
920 CALL HCHAR(9,19,131)
930 CALL HCHAR(15,13,133)
940 CALL HCHAR(15,19,132)
950 FOR I=2 TO 30 STEP 3
960 CALL HCHAR(12,I,136,2)
970 NEXT I
980 FOR I=1 TO 22 STEP 3
990 CALL VCHAR(I,16,137,2)
1000 NEXT I
1010 SUBEND
1020 SUB CARS(SP)
1030 IF SP>20 THEN SP=SP-4
1040 DISPLAY AT(6,20):SP:"MFH"
1050 CALL SPRITE(#1,96,14,75,1,0
,SP)
1060 CALL SPRITE(#2,100,16,98,25
0,0,-SP)
1070 CALL SPRITE(#3,108,6,1,128,
SP,0)
1080 CALL SPRITE(#4,104,3,190,10
5,-SP,0)
1090 SUBEND
1100 SUB CRASH(CR)
1110 CALL MOTION(#1,0,0,#2,0,0,#
3,0,0,#4,0,0)
1120 CALL SPRITE(#9,112,9,88,120
)
1130 CALL SPRITE(#10,112,12,88,1
20,5,5,#11,112,12,86,120,-5,-5,#
12,112,12,98,120,5,-5,#13,112,12
,88,120,-5,5)
1140 FOR I=0 TO 20
1150 CALL COLOR(#9,9)
1160 CALL SOUND(-200,-7,I,110,I+
5)
1170 CALL COLOR(#9,12)
1180 NEXT I
1190 CALL DELSPRITE(ALL)
1200 CR=CR+1
1210 DISPLAY AT(22,23):CR
1220 SUBEND
1230 SUB FASTER(CT,SP,BST)
1240 CALL SOUND(200,-2,0,500,5)
1250 SP=SP+2
1260 IF SP>BST THEN BST=SP
1270 CT=0
1280 DISPLAY AT(6,20):SP:"MPH"
1290 SUBEND
```

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Insight on the Amstrad CPC464

In the first of a regular series of Amstrad programming articles David Ellis explains the ins and outs of the Amstrad resident system extension, or RSX

One of the most useful features of Amstrad's BASIC is the ability to create new command words. The number of new words which can be created is limited only by the amount of free memory, which in the case of Amstrad's CPC464 is a healthy 42½K. In this series of articles we will see how these new words are created, and I shall supply some useful routines to help increase both the power and flexibility of your Amstrad's BASIC

New BASIC words are created by means of the Resident System Extension, usually referred to as the RSX. Once an RSX has been created it then has to be initialised. This tells the operating system firmware that an RSX is present. A special firmware routine is provided for this operation — KL LOG EXT (log on the RSX extension)

Layout of an RSX

1 RSX command table

The first two bytes of this command table must contain the address where the start of the Word Table resides. The following bytes then specify the addresses of the machine code routines for each of these new words.

2 Word table

This table contains a list of the new word names. These are stored as ASCII characters. The last character of each word must have 128 (80 HEX) added to its ASCII value so that the end of the word can be recognised. The last entry in the word table must be a zero, to mark the end of the table

3 Machine code routines

Each new word must have a machine code routine written for it. This can be of any length. Other routines can also be called. A RET (return from subroutine) command is needed if a return to BASIC is required

Figure 1 shows a typical layout for the RSX. Three new words have been created — MOVE, WAIT, and BOX. The words must consist of alphabetical characters (automatically converted to upper case), numeric characters or dots, and can be up to 16 characters in length. When used within a BASIC program the new words are stored as a sequence of ASCII characters and not in token form. A compromise should therefore be made between the length and readability of a new word. In other words, keep the word as short as possible without making it meaningless. For example, you could shorten the above words to M, W, and B, but their function is then not clear

To introduce the new words and their routines to the firmware several values must be passed to the KG LOG EXT routine. These are.

1 The BC register pair is loaded with the start address of the RSX command table. In the example in fig 1 it is at &9000

2 The HL register pair is loaded with a four-byte buffer, which is merely a small workspace used by the Kernal. This can be located anywhere within the central 32K of RAM — preferably out of harm's way!

Once this has been done a CALL is made to the KL LOG EXT routine, and the new words and their routines are then placed on the list of external commands. When the bar sign is placed in front of a new word this causes the external commands to be searched. If the word is found in the word table then the address of the machine code routine will be found from the corresponding position in the RSX command table, and then the machine code routine will be called

If the word is not found when the end of the word table is reached (denoted by a zero) then the message 'Unknown command) will be returned. You may like to try this out by typing the bar sign (you will find it on the '@' key), followed by any word you like. As you have not initialised any RSX 'Unknown command' message should be returned

The bar sign incidentally, does not form part of a new word — it is used to signify that the word that follows is an external command

Next week we will set up the RSX and start to add some new word to the Amstrad's BASIC. About 10K of memory will be set aside to accommodate these new words and their routines. This amount of memory will be enough for at least 100 new words, although this will depend upon the length of the individual machine code routines. Over the next few weeks I shall be supplying around 30 new words which use up about 2½K of memory. This will leave plenty of room for adding additional words which, with your help, will appear at regular intervals in HCW

Fig.1 Layout of an RSX

RSX command table			Word Table			
Address	Op code		Address	ASCII		Name
&900	&00	Address of Word Table (&9100)	&9100	77	1	M
&9001	&91		&9101	79		O
&9002	&CD	CALL &9200 Address of routine 1 for MOVE	&9102	86		V
&9003	&00		&9103	197		E − 128
&9004	&92		&9104	87	2	W
&9005	&CD	CALL &9300 Address of routine 2 for WAIT	&9105	65		I
&9006	&00		&9106	73		I
&9007	&93		&9107	212		T + 128
&9008	&CD	CALL &9400 Address of routine 3 for BOX	&9108	66	3	B
&9006	&00		&9108	79		O
&900A	&94		&910A	216		X + 128
			&9108	0		end of table

Machine code routines

```
1    &9200 Machine code Routine for MOVE
                 -

                 -
                RET
2    &9300 Machine code Routine for WAIT



                RET
3    &9400 Machine code Routine for BOX



                RET
```

Creative leisure

This quintet will help you use your leisure time satisfyingly. Plan your garden, discover supernatural powers, or paint and draw

Number Painter 16K Spectrum £6.95

Sinclair, Stanhope Rd, Camberly, Surrey GU15 3PS

Although this game is rated for children between the ages of five and fourteen, people much older will find it fun It's a multi screen platform game, cleverly adapted to develop mental agility by using mathematics as a theme The object is to make your total equal the target.

This is done by guiding a character around the screen, over numbers, either plus or minus, or mathematical symbols When you reach a number, or symbol, you press a key and your total is altered accordingly and the number or symbol flies off to another place Whilst you are playing a bucket of paint is wending its wey to the top of the screen Once it gets there the paint is split and that little session is over

There are twelve levels of difficulty, with targets ranging from one to ten up to 700 and 999 With four speeds, from Mr Plod to Mr Speedy, there is a choice for anyone Of course, the faster the character, the faster the bucket rises

An excellent game, well thought out, expertly programmed, and a price which is almost unbelieveable these days **B B**

instructions	100%
graphics	100%
playability	100%
value for money	100%

★ ★ ★ ★ ★

The Designer's Pencil CBM 64 £11.99

Activision, 5-7 Forlease Rd, Maidenhead, Berks SL6 1RP

Using BASIC to draw diagrams or pictures on the 64 is, to put it politely, painful Now Activision has made it a pleasure

This is a powerful package, so you can expect to have to spend a bit of time learning how to use it to its full potential It is similar in many ways to a programming language such as LOGO but with more features You can draw numbers, letters, circles, change colour and fill shapes while playing tunes

The pencil language also includes GOTOs, subroutines and a 'skip next instruction if [illegible]' Don't panic if you take ages keying in programs it's all done using the joystick to point at the next statement to add to the program Even editing and running the program is joystick controlled

Getting the hang of The Designer's Pencil can claim education benefits both for geometry and programming concepts The instruction leaflet is fairly easy to learn from and the software includes several demonstration programs to help. As well as listing programs on the printer you can print the pictures, given the right printer All this for £11 95 is excellent value **B.J.**

instructions	83%
graphics	60%
ease of use	75%
value for money	95%

★ ★ ★ ★

Plan and Design Your Garden Spectrum £14.95

Blandford Press, Link Hse, West St, Poole, Dorset

This beautifully produced package comprises a 128 page book, profusely illustrated with line drawings and colour plates, together with a computer program The retail price of the book is £3 95 Thus the program should add £11 worth of convenience

Sadly this is not the case The liner notes suggest a menu driven program which allows the facility to plan your garden, dump the result to a printer do another one and compare the results It also states that the computer will advise you which plants to put where

The first program is fairly crude BASIC with user defined characters to represent grass, building, water and plants A moving cursor allows placement in any area of the screen When it's complete, no print option is available neither is any advice You'd be better off with a paper and pencil Similarly, the gardening year program takes so long to load, and contains such little information, that a good reference book would be vastly superior

The liner notes are an inaccurate description of a program which adds nothing to a good book **D M**

instructions	20%
display	30%
ease of use	35%
value for money	30%

★

Five Dice Spectrum £2.95 (6-pack £12.95)

C J Software, Micro Hse, 1 Hill View, Northleach, Glos

Fine packaging and a superbly designed cassette insert can't make this anything but a mediocre program, bettered many times before

Shortly after loading you are instructed to stop the tape and full instructions and scoring appear — beware, you can read them only once before loading the full program You must record or print them

The game — a version of Yahtsee — can be played by up to four players each having 14 turns, with the object of scoring the most points possible from various combinations of five dice Pairs, pairs fours, full house, short run, long run, five dice and chance all have to be understood and used to gain points

A game can be accidentally 'broken' and the BASIC program listed — so don't touch the wrong key!

After choosing number of players and entering name, the score-board momentarily appears, before five dice come on screen to be shaken three times, with option to hold after the first two They are even shaken when all five are held! Then the score board reappears and you choose where to place the dice combination, and the score is entered

At £2 95, fair value — but could easily have been improved **T.W.**

instructions	60%
graphics	15%
playability	25%
value for money	60%

★ ★

Psi-Games Spectrum £2.95 (4-pack £12.95)

C J Software, Micro Hse, 1 Hill View, Northleach, Cheltenham, Glos

This program contains tests, games and demonstrations introducing telepathy, precognition and memory associations, and to find out whether you have any supernatural powers — like reading minds and predicting events The author believes each person has such powers and needs to 'exercise' them in order to control them.

These tests, based upon those of Professor Rhine, American researcher of the 1930s, should do this — and the graphs should over a long period show a significant improvement in your test performances

Menu offers options to initialise colours, level of play, Rhine card game, conduct precognition test store/recall data, computer self test and 'terminate' Rhine card test asks you to predict 10 cards and to find pairs on a 40 card grid The telepathy tests require a partner to watch cards displayed on screen, while you input card numbers seen, while precognition test asks you to guess 10 cards

When self testing, the computer will try to predict each random card based on least popular, most popular and random selection Graphs of results can be stored and compared with those gained on a subsequent test **T.W**

instructions	60%
graphics	60%
playability	60%
value for money	60%

★ ★ ★

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SPECTRUM 48K

Gremlin Graphics

[illegible] Carver Street Sheffield [illegible]

Race of the caterpillars

Place your bets and choose your odds — the race is on. And it's not horses or greyhounds — but caterpillars in this game of chance by Peter Talliss

This game runs on the Atari 400 or 800 in 16K. It's a game of chance. You pick your caterpillar and the lucky punter wins the race.

The caterpillars are numbered 0-4 and you can play by yourself or with up to three others.

Each player starts with $100 on any one of the caterpillars. The speed of each caterpillar is proportional to its odds, although every caterpillar has a bad day from time to time.

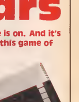
The player who has the most money after six runs is the winner.

How it works

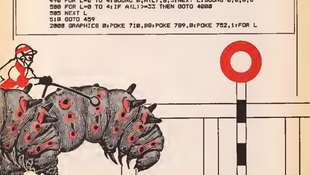
0-1 set dimensions
5-458 set up game display
459-510 move caterpillars and check for winner
2000-3200 instructions and input data from keyboard
4000-4006 update player scores
4049-4051 display finish post
4100-5090 display player scores
7000-7001 titles page
7010-7020 machine code to move character set from ROM to RAM
7040-7042 machine code for display list interrupt routine
7060-7070 character set data
7080-7110 set up sprites

Variables

PL number of players
A(X) caterpillar's horizontal position
B(X) caterpillar's odds
C(X) speed of caterpillar
D(Y) player stakes
E(Y) caterpillar chosen by player
T(Y) player's total money
X = 0 to 4 caterpillars
Y = 1 to PL (number of players)



```
0 CLR :DIM A(4),B(4),C(4),D(4),E(4),A$(5),B$(5),P1$(7),
P2$(7),P3$(7),P4$(7):A$="  ' #":B$="  $%&"
1 A$(4,4)=CHR$(34):DIM T(4),X$(7):FOR L=1 TO 4:T(L)=200
:NEXT L
3 GOSUB 7000:GOTO 2000
5 GRAPHICS 0:POKE 559,0:POKE 756,PEEK(106)-8:POKE 710,2
1:POKE 752,1:? " ":POKE 82,0:POKE 83,40
40 DL=PEEK(560)+256*PEEK(561)+4
60 FOR L=2 TO 6:POKE DL+L,18:NEXT L:POKE DL+17,18:POKE
DL+10,18:POKE DL-1,194:POKE DL+20,130
70 P=PEEK(88)+256*PEEK(89):P=P+3*40+15:FOR L=0 TO 47:PO
KE L+P,87:POKE L+P+48,83:NEXT L
80 P=P+11*48+185:FOR L=0 TO 47:POKE L+P,87:POKE L+P+48,
83:NEXT L
450 FOR L=0 TO 4:A(L)=1:NEXT L:POKE 1537,169:POKE 1538,
PEEK(20)
455 POKE 512,0:POKE 513,6:POKE 54286,192
456 POKE 559,42:FOR L=7 TO 15 STEP 2:POSITION 1,L:? INT
((L-7)/2):FOR G=0 TO 15:SOUND 0,60,10,15-G:NEXT G:NEXT
L
457 FOR G=0 TO 255 STEP 0.5:NEXT G
458 FOR L=7 TO 15 STEP 2:POSITION 1,L:? " ":FOR G=0 TO
15:SOUND 0,60,10,15-G:NEXT G:NEXT L:GOSUB 8000
459 FOR L=0 TO 4:A(L)=A(L)+RND(0)*C(L):NEXT L
460 FOR L=7 TO 15 STEP 2:SOUND 0,0,0,0:POSITION INT(A((
L-7)/2)),L:? A$:NEXT L
470 FOR L=0 TO 4:SOUND 0,A(L),8,5:NEXT L
480 FOR L=7 TO 15 STEP 2:SOUND 0,0,0,0:POSITION INT(A((
L-7)/2)),L:? B$:NEXT L
490 FOR L=0 TO 4:SOUND 0,A(L),8,3:NEXT L:SOUND 0,0,0,0
500 FOR L=0 TO 4:IF A(L)>=33 THEN GOTO 4000
505 NEXT L
510 GOTO 459
2000 GRAPHICS 0:POKE 710,88:POKE 709,0:POKE 752,1:FOR L
```



```
=0 TO 3:SOUND L,0,0,0:NEXT L
2005 TRAP 2005
2010 POSITION 15,5:? "CATERPILLAR RACES"
2020 ? :? "INPUT NUMBER OF PLAYERS (1-4) ";
2030 INPUT PL:IF PL<1 OR PL>4 THEN 2020
2035 GOSUB 6000
2040 ? :? "EACH PLAYER STARTS WITH #200      ":? :? "YOU
MAY BET ON ONE CATERPILLAR IN":? :? "EACH OF THE SIX RU
NS"
2050 ? :? "THE COURSE LIMIT IS #100":? :? "PRESS RETURN
 TO CONTINUE"
2060 POKE 764,255
2065 TRAP 2065
2070 IF PEEK(764)<>12 THEN 2070
2071 GOSUB 6000
2072 POKE 764,255:? "}":? " ":POSITION 15,5:? "INPUT PL
AYER NAMES"
2073 INPUT P1$:IF P1$="" THEN 2065
2074 IF PL>1 THEN INPUT P2$:IF P2$="" THEN 2065
2075 IF PL>2 THEN INPUT P3$:IF P3$="" THEN 2065
2076 IF PL>3 THEN INPUT P4$:IF P4$="" THEN 2065
2077 TRAP 2077
2078 GOSUB 6000:GOSUB 6000
2080 ? "}":? " ":POSITION 7,5:? "RUN NO.";GM+1;"     CAT
ERPILLAR ODDS"
2090 FOR L=0 TO 4:B(L)=INT(RND(0)*10)+2:NEXT L
3000 FOR L=0 TO 4:? :? "CATERPILLAR ";L;,,B(L);"  1":NE
XT L
3035 FOR L=0 TO 4:C(L)=(12-B(L)+RND(0)*B(L)):C(L)=C(L)/
10:NEXT L
3090 ? :FOR L=1 TO PL:IF L=1 THEN X$=P1$
3091 IF L=2 THEN X$=P2$
3092 IF L=3 THEN X$=P3$
3093 IF L=4 THEN X$=P4$
3094 TRAP 3094:? X$;" INPUT CATERPILLAR NUMBER ";:INPUT
 A:GOSUB 6000:IF A<0 OR A>4 THEN 3094
3096 D(L)=A:NEXT L:?
3100 FOR L=1 TO PL:IF L=1 THEN X$=P1$
3101 IF L=2 THEN X$=P2$
3102 IF L=3 THEN X$=P3$
3103 IF L=4 THEN X$=P4$
3104 TRAP 3104:? X$;" INPUT BET ";:INPUT A:GOSUB 6000:I
F A<0 OR A>100 THEN 3104
3105 E(L)=A:NEXT L:?
3200 GOTO 5
4000 PR=B(L):FOR G=1 TO PL:IF D(G)=L THEN PR1=E(G):T(G)
=T(G)+PR*PR1+E(G)
4002 NEXT G:Z=0
4006 FOR L=1 TO 4:T(L)=T(L)-E(L):NEXT L
4049 XP=213
4050 FOR L=202 TO 192 STEP -1:POKE 53240,L:FOR G=0 TO 3
:NEXT G:NEXT L:POKE 1537,169:POKE 1530,PEEK(20)
4051 FOR L=250 TO 0 STEP -1:SOUND 0,L,10,0:NEXT L:FOR G
=0 TO 200:NEXT G:POKE 53240,230
4100 GRAPHICS 0:POKE 752,1:? " ":POKE 82,2:POKE 1537,16
5:POKE 1530,20
4111 FOR L=0 TO 4:IF A(L)>=33 THEN Z=L:GOTO 4113
4112 NEXT L
4113 FOR L=0 TO 4:IF A(L)>=33 AND L<>Z TNEN ? "  PHOTO
FINISH":? :? "CATERPILLAR ";Z;" WON":GOTO 4115
```

```
4114 NEXT L
4115 ? :? P1$;,,;"$";T(1)
4120 IF PL>=2 THEN ? :? P2$;,,;"$";T(2)
4130 IF PL>=3 THEN ? :? P3$;,,;"$";T(3)
4140 IF PL=4 THEN ? :? P4$;,,;"$";T(4)
4800 GM=GM+1:IF GM<6 THEN ? :? "PRESS RETURN TO CONTINU
E ":GOTO 4810
4805 GOTO 5000
4810 POKE 764,255
4820 IF PEEK(764)<>12 THEN 4820
4830 GOSUB 6000:POKE 710,88:POKE 709,0:POKE 764,255:GOT
O 2077
5000 FOR L=1 TO PL:IF T(L)>S THEN S=T(L)
5010 NEXT L:?
5020 IF T(1)=S THEN ? P1$;" WINS WITH $";S
5030 IF PL>=2 AND T(2)=S THEN ? P2$;" WINS WITH $";S
5040 IF PL>=3 AND T(3)=S THEN ? P3$;" WINS WITH $";S
5050 IF PL=4 AND T(4)=S THEN ? P4$;" NINS NITH $";S
5060 ? :? "PRESS RETURN PLAY AGAIN"
5070 POKE 764,255
5080 IF PEEK(764)<>12 THEN 5080
5090 RUN
6000 FOR S=15 TO 0 STEP -1:SOUND 0,50,10,S:NEXT S:FOR S
=15 TO 0 STEP -1:SOUND 0,50,10,S:NEXT S:RETURN
7000 GRAPHICS 17:POKE 709,0:POSITION 1,4:? #6;"CATTERPI
LLAR rAcEs":POSITION 2,6:? #6;"by p*t*r t*lli*s"
7001 FOR L=0 TO 3:SOUND L,L*50+80,10,8:FOR G=0 TO 50:PO
KE 709,L*3+3:NEXT G:NEXT L
7009 RESTORE 7010:FOR I=0 TO 31:READ A:POKE 1536+I,A:NE
XT I:P=256*(PEEK(106)-8):X=USR(1536,57344,P)
7010 DATA 104,104,133,204,104,133,203,104,133,206,104,1
33,205,162,4
7020 DATA 160,0,177,203,145,205,136,208,249,230,204,230
,206,202,208,240,96
7030 RESTORE 7040:FOR L=0 TO 48:READ A:POKE L+1536,A:NE
XT L
7040 DATA 72,165,20,73,255,141,4,212,169,215,141,10,212
,141,24,208,169,28,141,0,2,169,6,141,1,2,104,64,72,169,
21
7042 DATA 141,10,212,141,24,208,169,0,141,0,2,169,6,141
,1,2,104,64
7050 RESTOAE 7060:FOR L=0 TO 47:AEAD A:POKE P+8+L,A:NEX
T L
7060 DATA 0,0,0,0,46,127,255,238,0,0,0,0,238,255,255,23
8,0,0,0,0,236,254,251,239,0,0,0,3,15,63,63,30
7070 DATA 0,62,255,255,255,231,129,0,0,0,0,192,248,254,
246,252
7080 POKE 54279,PEEK(106)-16:POKE 53277,3:POKE 704,12:Z
=256*(PEEK(106)-16)
7090 RESTORE 7100:FOR L=0 TO 3:READ A:POKE 530+Z+L,A:NE
XT L
7100 DATA 31,17,17,31
7105 FOR L=0 TO 65:POKE L+Z+534,4:NEXT L
7110 RETURN
8000 TRAP 8010:S=5
8001 FOR L=0 TO 4:FOR G=7 TO 15 STEP 2:POSITION 0,G:? A
$(S,5):NEXT G:NEXT L:FOR S=0 TO 20:NEXT S:S=S-1:GOTO 80
01
8010 FOR L=15 TO 0 STEP -0.2:SOUND 0,24,8,L:NEXT L:POKE
 1537,165:POKE 1538,20:RETURN
```

Unknown perils await

Venture into the unknown with these five adventures. Are you brave enough to last the course?

Time Tunnels Spectrum £2.95 (4-pack £12.95)

C J Software, Micro Hse, 1 Hill View, Northleach, Cheltenham, Glos

White on red was never my favourite combination, but I'm glad I read the instructions. This game proved enjoyable and addictive. It's an unusual adventure-like program which is fast and reconfigures itself for each game.

Whilst on a walk, you get lost and follow a stream to the mouth of a dark, hidden cave. You decide to follow it downstream where an evil looking man forces you into the cave to find a golden ring. The Guardians warn of dangers as you seek the five [illegible] in order. Don't linger too long, or it will collapse on you! End of game!

Screen left shows cave data for the 16 caves — which one you are in, exit used and key part (if any); screen middle has map and lives left, while screen right has inventory, key parts left and scoring. Screen bottom says what happens, offers movement options and asks instructions.

You are instructed to draw a map of your route — and a separate insert gives simple hints and an example. This is necessary if you are to enjoy this game and find the ring. **T W**

instructions	80%
graphics	30%
playability	65%
value for money	75%

★ ★ ★

Catacombs CBM 64 £7.95

Anirog, Unit 10, Victoria Ind Est, Victoria Rd, Dartford, Kent

I think you need to be something of a mind-reader to be good at adventure games. There you are, confronted with a sealed door and a blocked passageway, knowing that you have to type in the right words to obtain a way forward. How on earth are you supposed to discover what those words are?

I spent an evening trying out everything that might get me past the first location, but nothing worked. However, Anirog had fortunately supplied a demo showing what I would have discovered if my thoughts had happened to run along the right [illegible] lack of [illegible] need not prevent me from telling you that this game has some excellent action graphics.

The objective is to find the ingredients for an elixir which will cure a plague. You can choose to take the role of Duke the fighter or Oswich the witch, and you are accompanied on your journey by Silvester the cat. No doubt there are lots of problems to be solved along the way, if you can manage to reach them. **M N**

instructions	60%
graphics	80%
playability	50%
value for money	70%

★ ★ ★

The Runes of Zendos Spectrum £7.95

Dorcas, 3 The Oasis, Glenfield, Leicester LE3 8QS

An adventure with delightfully animated graphics. Release the land of Dorcasia from the influence of the wizard Zendos by finding and releasing the power of 12 spells, then say the magic word. Just one snag! The words are written in a runic script and you have to work out its meaning by collecting clues.

The graphics are Miner-esque rather than Hobbit-esque, and the elves, goblins, metamorphs and objects can be seen as your animated figure moves about. Rather fine. Not only that, but when you find an inscription it is successfully added to the list of things you are carrying. I found the graphics a real bonus. They added considerably to my pleasure.

The inlay instructions are really detailed, as are the directions for saving your position to tape or Microdrive, though not the whole program. Shame!

One of the best things about the structure of this adventure is that it does give you a decent chance to get started before it gets awkward. Compulsive fun but rather pricey. **D.M**

instructions	100%
graphics	100%
playability	100%
value for money	80%

★ ★ ★ ★ ★

The Magic Sword 48K Spectrum £6.95

Database, Europa Hse, 68 Chester Rd, Hazel Grove, Stockport SK7 5NY

This is a pictorial/text adventure especially for the younger age groups, but what ages fall within the group is difficult to determine. Unless a child is playing under parental supervision, they will certainly need to be able to read.

There is a booklet with the story in it, and it begins 'Once upon a time...'. It is all about Princess Poppy, and Price Fred and a wicked witch who turns poor old Fred into a frog. Alright, it may be a well worn theme, but I am certain that small children are still enthralled by it. It is not too difficult a game for very young [illegible] to understand and there is no infuriating maze to get lost in.

At times I found there was an unfortunate choice of paper and ink in some of the scenes. I can only hope that younger eyes than mine are not troubled by the combination.

For the younger element, a charming game which I am sure they will enjoy playing. Perhaps a little overpriced to an old cynic like me, but what price a child's enjoyment? **B B**

instructions	60%
graphics	80%
playability	100%
value for money	90%

★ ★ ★ ★

Black Tower Spectrum £6.50

Dollarsoft

An adventure game featuring a picture of George Orwell on the loading screen for some reason. The adventure is illustrated in most locations with very simple, almost crude, line drawings. Whilst input from the keyboard is accepted swiftly, the interpreter only accepts simple statements, and the program takes quite a while to respond.

The plot centres around the Black Tower and your quest to find three keys and a scroll, taking them to the hut where you start. Also in the hut is Josi, your friendly resident kleptomaniac, who seems to have designs on everything you collect. Attempting to kill him is not recommended, and neither is asking for help — there isn't any.

The instructions on the inlay card are the rather traditional unhelpful adventure type, dealing very briefly with input and loading. Though the inlay also says 'An exciting adventure set in the magical lands surrounding the mysterious Black Tower. Meet exciting people, visit interesting places', I couldn't really summon up [illegible] enthusiasm for this. It's a rather over priced, ordinary adventure with nothing special to commend it. **D.M**

instructions	50%
graphics	70%
playability	70%
value for money	50%

★ ★ ★

Use your Oric to keep track of your finances

David Nowotnik, HCW regular contributor, shows you how to use your Oric/Atmos to keep tabs on income and expenditure

While prices continue their inevitable upward rise it remains essential to keep a close check on how we spend our money To do this by conventional pen and paper methods can be very time consuming It's a task I have allocated to my Oric computer, and it saves a lot of time in analysing income and expenditure

To use this program you'll need a 48K Oric-1 or Atmos computer If you have an Atmos, type in Listing 1 This program uses the STORE and RECALL commands of the Atmos to move data to and from tape These commands aren't available on the Oric 1, to overcome that difficulty, I ve written some replacement lines for Oric-1 users (Listing 1) As you will see, these replace the LOAD and SAVE subroutines (starting at lines 3000 and 4000) of the Atmos program in Listing 1

The program allows for the analysis of up to 18 months of income and expenditure It works by classifying all income and expenditure into five categories There is just one for income, but the home, car, family, and 'other' are the categories for expenditure You'll need to have kept good records of income and expenditure over several months to input data into this program

When you first run the program, you'll get a menu providing the main options available The first is the data entry routine Press '1' and you'll get a second menu, showing the main categories You should have the full month's data in front of you, enter each one at a time, selecting category first, then the item within that category, finally inputting the amount The program automatically totals several amounts added to one item Press option 6 to return to the main menu when complete

Option 2 in the main menu allows you to modify any figure entered in the data entry routine, so allowing errors to be corrected and late entries to be added To use this option, first select the month and year of the record you want, then the category and item You can add, subtract or replace an amount in any item.

The SAVE and LOAD options have full on-screen instructions of what to do. All you provide is the file name for the data file on tape

The 'number crunching' option is number 5, the analysis selection This sub totals all the amounts each month in each category, works out total expenditure, total income, the balance of income over expenditure, and the percentage of total expenditure of the individual categories of expenditure All that should be sufficient to ensure that you have all the information necessary to analyse your personal finances, and plan ahead for future income/expenditure

The individual items in each category were those most appropriate to my finances — they may not be ideally suited to you The program is designed to be reasonably flexible for item changes The items appear in the DATA lines starting at line 8000 You can make any changes you want to these DATA lines, with the following restrictions

The first category must be income items, and the remainder expenditure Each block of DATA lines for a category must be terminated by a 0 (zero), which marks the end of the items in any category. This means you could alter the number of items within a category if you wish

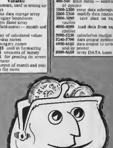
The program is also written in such a way that it should readily be translated to the BASIC of other micros

Variables

X,Y counters, used in setting up arrays
A() input data storage array
H() category boundaries
N$() Item name array
QR$() field names — month and year
V() array of calculated values
RT$() ratio names
IT$() category names
AM,AM$ used in formatting
PD,PD$ amounts of money
PN,PN$ for printing on screen or printer
M$,Y$ input of month and year
F$ data file name

How it works

70-210 set up main arrays
250-310 "are you sure?" check routine
320-370 format an amount of money to print on the screen
400-540 main menu — selection of options
1000-1300 enter data subroutine
2000-2360 modify data routine
3000-3090 save data on tape routine
4000-4090 load data from tape routine
5000-5230 calculation routine
5240-5700 data output options
6000-6610 data output to screen and/or printer
8000-8650 array DATA items



Listing 1

```
10 REM        Home Finance Analysis
20 REM         by David Nowotnik
30 REM            April, 1984
40 REM
50 REM     Initialise
60 REM
```

```
70 HIMEM36863:X=0:Y=0
80 READA$
90 IFA$="END"THEN120
100 IFA$="0"THENY=Y+1:GOTO80
110 X=X+1:GOTO80
120 RESTORE:DIMA(18,X),H(5),N$(X),QR$(18,2),V(18,12),RT$(4)
130 Y=1:H(5)=X+1
140 FORI=1TOX
150 READA$:IFA$="0"THENH(Y)=I:Y=Y+1:GOTO150
160 N$(I)=A$:NEXTI
170 DIMU(2),IT$(5):READA$:READA$
180 FORI=1TO5:READIT$(I):NEXT
200 FORI=1TO4:READRT$(I):NEXT
210 GOTO400
250 REM  Are you sure?
260 PRINT:INFUT"       Return - are you sure?  ";J$
290 IFJ$="Y"ORJ$="y"THENJJ=1:RETURN
300 IFJ$="N"ORJ$="n"THENJJ=0:RETURN
310 GOTO260
320 REM  Print amount
330 PD=INT(AM):PN=INT((AM-PD)*100)
340 PD$=STR$(PD):L=LEN(PD$):PD$="     "+RIGHT$(PD$,L-1)
350 PN$=STR$(PN):PN$=RIGHT$(PN$,LEN(PN$)-1):IFPN<10THENPN$="0"+PN$
360 AM$="£"+RIGHT$(PD$,5)+"."+PN$
370 PRINTSPC(28);CHR$(11);AM$:RETURN
400 REM  Main Menu
410 CLS:PRINT:PRINT
420 PRINTSPC(10);"Home Finance Analysis"
430 PRINT:PRINT:PRINT"   Options:-"
440 PRINT:PRINT:PRINT"  1. Enter data"
450 PRINT:PRINT"  2. Modify data"
460 PRINT:PRINT"  3. Save data file on tape"
470 PRINT:PRINT"  4. Load data file from tape"
480 PRINT:PRINT"  5. Analysis"
490 PRINT:PRINT"  6. Stop"
500 PRINT:PRINT:PRINT"         Select option (1-6)"
510 GETZ$:IFZ$<"1"ORZ$>"6"THEN510
520 Z=VAL(Z$):ONZGOSUB1000,2000,3000,4000,5000,7000
530 IFZ=6THENSTOP
540 GOTO400
1000 REM  Enter data
1010 CLS:PRINT:PRINT
1020 PRINTSPC(16);"Enter Data"
1030 PRINT:PRINT
1040 T=U(1)+1:IFT>18THENPRINT:PRINT"  ARRAY FULL:WAIT400:RETURN
1045 U(1)=T
1050 INPUT"  Enter month ";M$:PRINT
1060 INPUT"  Enter Year  ";Y$:QR$(T,1)=M$:QR$(T,2)=Y$
1070 CLS:PRINT:PRINT"       Select Category:-"
1080 PRINT:PRINT:PRINT
1090 FORI=1TO5:PRINTSPC(4);I;SPC(4);IT$(I)
1100 PRINT:NEXTI
1120 PRINT"     6     Return to main menu."
1130 PRINT:PRINT"       Select one to six"
1140 GETZ$:IFZ$<"1"ORZ$>"6"THEN1140
1150 B=VAL(Z$):IFB<6THEN1200
1160 GOSUB250
1170 IFJJ=1THENRETURNELSE1070
1200 CLS:PRINT:PRINT"      Enter data":PRINT:PRINT
1210 PRINT"  Enter item":PRINT
1220 IFB=1THENK=0ELSEK=H(B-1)-1
1230 FORI=1TOH(B)-K-1
```

```
1240 PRINTSPC(4-INT(I/10));I;SPC(4);N$(I+K)
1250 AM=A(T,K+I):GOSUB320:NEXT
1260 PRINT:INPUT"  Item number ";V
1270 IFV<1ORV>H(B)-K-1ORV<>INT(V)THEN1260
1275 PRINTSPC(20);CHR$(11);N$(V+K)
1280 PRINT:INPUT"  Enter amount £";C
1290 A(T,V+K)=A(T,V+K)+C
1300 GOTO1070
2000 REM  Modify data
2010 CLS:PRINT:PRINT:IFT<1THENRETURN
2020 PRINTSPC(16);"Modify data":PRINT
2025 PRINT"   Select file:-":PRINT
2030 FORI=1TO18:IFI>TTHEN2050
2040 PRINTSPC(4-INT(I/10));I;SPC(4);QR$(I,1);" ";QR$(I,2):NEXT
2050 GETZ$:IFZ$<"1"ORZ$>RIGHT$(STR$(T),1)THEN2050
2060 V=VAL(Z$)
2070 CLS:PRINT:PRINT
2080 PRINTSPC(10);QR$(V,1);" ";QR$(V,2)
2090 PRINT:PRINT
2100 PRINT"     Select category:-":PRINT
2110 FORI=1TO5:PRINTSPC(4);I;SPC(4);IT$(I)
2120 PRINT:NEXT
2130 PRINT"     6     Return to main menu"
2140 PRINT:PRINT"     Select one to six"
2150 GETZ$:IFZ$<"1"ORZ$>"6"THEN2150
2160 B=VAL(Z$):IFB<6THEN2180
2170 GOSUB250:IFJJ=1THENRETURNELSE2070
2180 CLS:PRINT:PRINT"     Modify data - ";QR$(V,1);" ";QR$(V,2):PRINT:PRINT
2190 PRINT"   Enter item number:-":PRINT
2200 IFB=1THENK=0ELSEK=H(B-1)-1
2210 FORI=1TOH(B)-1
2220 PRINTSPC(4-INT(I/10));I;SPC(4);N$(I+K)
2300 IFZ$="N"ORZ$="n"THENR=2:GOTO2330
2310 GOTO2270
2330 PRINT:INPUT"  Enter amount £";C
2340 A(V,K+E)=-A(V,k+E)*(R<2)-C*(R<>1)+C*(R=1)
2350 IFA(V,K+E)<0THENA(V,K+E)=0
2360 GOTO2070
3000 REM  Save on tape
3010 CLS:PRINT:PRINT"     Save file on tape"
3020 PRINT:PRINT:INPUT"      Enter the file name ";F$
3030 PRINT:PRINT:PRINT"    Start the tape and press any key"
3040 GETA$
3050 CSAVEF$,A1024,E1040
3060 WAIT20:STOREA,"1"
3070 WAIT20:STOREQR$,"2"
3080 WAIT20:STOREU,"3"
3090 RETURN
4000 REM  Load data from tape
4010 CLS:PRINT:PRINT"    Load data from tape"
4020 PRINT:PRINT:INPUT"     , Enter the file name ";F$
4030 PRINT:PRINT:PRINT"         Start the tape"
4050 CLOADF$
4060 RECALLA,"1"
4070 RECALLQR$,"2"
4080 RECALLU,"3"
4090 T=U(1):RETURN
5000 REM  Analysis of data
5010 CLS:PRINT:PRINT"     Analysis - please wait"
5020 FORI=1TO18:FORJ=1TO5
5030 V(I,J)=0:NEXT:NEXT
5040 FORI=1TOT
```

```
5050 FORJ=1TO5
5060 IFJ=1THENK=1ELSEK=H(J-1)
5070 FORL=KTOH(J)-1
5080 V(I,J)=V(I,J)+A(I,L)
5090 NEXT:NEXT:NEXT
5100 FORI=1TO18:V(I,6)=0
5110 FORJ=2TO5
5120 V(I,6)=V(I,6)+V(I,J)
5130 NEXT:NEXT
5140 FORI=1TO18
5150 IFV(I,6)=0THEN5200
5160 FORJ=2TO5
5170 TT=V(I,J)/V(I,6)
5180 V(I,J+6)=INT(TT*1000+.5)/10
5190 NEXT
5200 NEXT
5210 FORI=1TO18
5220 V(I,12)=V(I,1)-V(I,6)
5230 NEXTI
5240 CLS:PRINT:PRINT"      Data output options:-"
5250 PRINT:PRINT:PRINT" 1.  All data to screen"
5260 PRINT:PRINT" 2.  All data to printer"
5270 PRINT:PRINT" 3.  Ratios to screen"
5290 PRINT:PRINT" 4.  Ratios to printer"
5300 PRINT:PRINT" 5.  Return to main menu"
5310 PRINT:PRINT:PRINT"        Select option (1-5)"
5320 GETA$:IFA$<"1"ORA$>"5"THEN5320
5340 X=VAL(A$):IFX=5THENRETURN
5350 ONXGOSUB5400,5500,5600,5700
5360 GOTO5240
5400 AD=1:PP=0:GOSUB6000:RETURN
5500 AD=1:PP=1:GOSUB6000:RETURN
5600 AD=0:PP=0:GOSUB6000:RETURN
5700 AD=0:PP=1:GOSUB6000:RETURN
6000 REM Output data
6010 FORI=1TOT:LL=3:KK=1:AA=1:MK=0
6020 CLS:PRINT:PRINTSPC(8);QR$(I,1);" ";QR$(I,2)
6030 IFPP=1THENLPRINTSPC(8);QR$(I,1);" ";QR$(I,2)
6040 IFAD=0THEN6200
6050 LL=LL+3:PRINTIT$(KK):PRINT:IFPP=1THENLPRINTIT$(KK):LPRINT
6060 PRINTSPC(3);N$(AA):AM=A(I,AA):GOSUB320
6070 IFPP=1THENLPRINTTAB(4);N$(AA);TAB(20);AM$
6080 AA=AA+1:LL=LL+1
6090 IFAA=H(KK)THENGOSUB6500
6095 IFKK>5THEN6150
6100 IFLL<25ANDMK=0THEN6060
6120 IFLL<23ANDMK=1THENMK=0:GOTO6050
6130 GOSUB6600:GOTO6095
6150 PRINT:PRINT"    Press any key"
6160 GETR$
6200 CLS:PRINT:PRINTSPC(4);QR$(I,1);" ";QR$(I,2);" -Analysis":PRINT
6210 IFPP=1THENLPRINT:LPRINT"  ANALYSIS":LPRINT
6220 PRINT" Total Expenditure = £";V(I,6):PRINT
6230 IFPP=1THENLPRINT"  Total Expenditure = £";V(I,6):LPRINT
6240 PRINT"RATIOS:-":PRINT:IFPP=1THENLPRINT"RATIOS:-":LPRINT
6250 FORJ=1TO4:PRINTRT$(J);TAB(20);V(I,J+7)
6260 IFPP=1THENLPRINTRT$(J);TAB(20);V(I,J+7)
6270 NEXTJ
6280 PRINT:PRINT"  Income less expenditure = £";V(I,12)
6290 IFPP=1THENLPRINT:LPRINT"  Income less expenditure = £";V(I,12)
6300 PRINT:PRINT"        PRESS ANY KEY"
6310 GETG$
6320 IFPP=1THENLPRINT:LPRINT:LPRINT
6330 NEXTI:RETURN
```

```
6500 PRINTSPC(4);"Sub-total":AM=V(I,KK):GOSUB320
6510 IFPP=1THENLPRINTTAB(4);"Sub-total";TAB(20);AM$
6520 KK=KK+1:MK=1:RETURN
6600 PRINT:FRINTSPC(4);"PRESS ANY KEY FOR NEXT PAGE"
6610 GETR$:CLS:LL=0:RETURN
7000 REM Stop
7010 RETURN
8000 REM Income
8005 REM
8010 DATASalary,From savings,Other,0
8020 REM
8030 REM House
8040 REM
8050 DATAMortgage,Rates,Water Rates
8060 DATAHouse Insur.,Contents Insur.
8070 DATAGas,Electricity,Telephone
8080 DATAMaintenance,Purchases
8090 DATAMisc.
8100 DATA0
8110 REM
8120 REM Car
8130 REM
8140 DATACar Tax,Insurance,Petrol
8150 DATARAC Membership,Repairs
8160 DATAMaintenance,Misc.
8170 DATA0
8180 REM
8190 REM Family
8200 REM
8210 DATAGroceries,Clothes,Fees
8220 DATALife Insurance,Entertainment
8230 DATAHolidays,Presents,Meals
8240 DATAPocket Money,Misc.
8250 DATA0
8260 REM
8270 REM Other expenditure Items
8280 REM
8290 DATACash,To savings,Misc.,0
8500 DATAEND
8600 REM
8610 DATAIncome,House,Car,Family,Other items
8620 DATAPercent on house
8630 DATAPercent on car
8640 DATAPercent on Family
8650 DATAPercent on other items
```

Listing 2 Modifications to SAVE/LOAD routines to enable use on the Oric-1

```
3000 REM  Save on tape
3010 CLS:PRINT:PRINT"     Save file on tape"
3020 PRINT:PRINT"          Please wait"
3030 Q=36864:POKEQ,96
3040 FORI=1TO18
3050 FORJ=1TOX
3060 Q=Q+1:DOKEQ,INT(A(I,J))
3070 Q=Q+2:POKEQ,INT(100*(A(I,J)-INT(A(I,J))))
3080 NEXT:NEXT
3090 FORI=1TO18
3100 FORJ=1TO2
3110 Z$=QR$(I,J)
3120 L=LEN(Z$):IFL=0THEN3160
3130 FORK=1TOLEN(Z$)
3140 Q=Q+1:POKEQ,ASC(MID$(Z$,K,1))
3150 NEXTK
```

```
3160 Q=Q+1:POKEQ,13
3170 NEXT:NEXT
3180 Q=Q+1:POKEQ,U(1)
3190 Q=Q+1
3200 CLS:PRINT:INPUT"          Enter the file name ";F$
3210 PRINT:PRINT"   Press record, then any key"
3220 GETA$
3230 CSAVEF$,A36864,EQ,AUTO
3240 RETURN
4000 REM  Load data from tape
4010 CLS:PRINT:PRINT"    Load data from tape"
4020 PRINT:PRINT:INPUT"        Enter the file name ";F$
4030 PRINT:PRINT:PRINT"             Start the tape"
4040 DOKE49136,DEEK(156)
4050 CLOADF$
4060 DOKE156,DEEK(49136)
4070 Q=36865
4080 FORI=1TO18
4090 FORJ=1TOX
4100 A(I,J)=DEEK(Q)+(PEEK(Q+2)/100)
4110 Q=Q+3:NEXT:NEXT
4120 FORI=1TO18:FORJ=1TO2
4130 Z$=""
4140 Z=PEEK(Q):IFZ=13THEN4160
4150 Z$=Z$+CHR$(Z):Q=Q+1:GOTO4140
4160 QR$(I,J)=Z$
4170 Q=Q+1:NEXT:NEXT
4180 U(1)=PEEK(Q)
4190 T=U(1):RETURN
```

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Destroy or be destroyed!

You're at war, and the stakes are high. Either you annihilate the enemy, or you will be annihilated.

By Al Plattner

This program runs on the unexpanded VIC 20 and is the popular game of Battle Ships

After LOADing and RUNning the program you are asked to type in the number of ships you want to have in your fleet This can be any number from one to eight. The enemy (the computer) automatically has one more ship than you do

How it works

20-20	set up user defined graphics
100-218	set up screen
220-260	set up positions of computer's fleet
265-320	input player's fleet
330-430	computer's shot
435-540	input player's shot
1000-1020	fire missile
1500-1520	explosion 1 — hits sea
2000-2110	explosion 2 — hits ship
2500-2620	computer wins — display remaining ships
3000 3020	player wins
3500-3520	data for UDGs
4000-4140	title — input number of ships

The playing screen is then displayed, and it comprises two grids of 9 x 9 The left grid is used to display your shots, while the right hand grid displays your ships and the computer's shots A status line is at the bottom of the screen displaying shots, hits and salvo.

Firstly you are asked to type in the co-ordinates of your ships You type them in letter first, followed by number, separating them by a comma, e g A,7 When all ships are positioned, the battle begins

The computer fires first. Once the missile is fired, the co-ordinates are shown of where it lands and the shot is displayed on the ship grid Then you shoot by entering the co ordinates of where you want the missile to strike

Once you have entered the co-ordinates press 'F1' to fire the missile If you wish to use the salvo feature, press 'F3', provided the co-ordinates you have entered are not on the edge of the grid, e g C,1 or 1,5 In this case the co-ordinates you have entered will be the centre of a salvo of nine shots fired together

You can only fire one salvo per game The computer cannot use the salvo feature, which is why it has an extra ship in its fleet

Variables

Z	number of ships
SV	salvo
S	ships
PH	number of players hits
CH	number of computer's hits
CS%(,)	array containing co-ords of computer's ships
CO (+7680)	start of colour memory
X,Y	X and Y co-ordinates on grids
G,H,FF	flags used during salvo operation

Hints on conversion

The idea for this game can easily be converted Careful study of lines 470-530 will show how the salvo feature is operated An array is used to hold the positions of the computer's fleet while the grid itself is used to hold players ships positions As is usual with CBM BASIC POKEs are used for sound These POKEs are

36876	sound
36877	'white noise'
36878	volume

Screen POKEs are

7680	start of screen memory
30720 (+7680)	start of corresponding colour memory
36879	screen/border colour
36865	determines position of screen — used to 'shake' screen during explosion

The winner is the first to destroy the other's fleet If the computer wins it will display the positions of the remaining ships in its fleet

This program is especially useful for teaching and familiarising the user with co ordinates It saves an extra ¼K of memory by using memory from 7424 to 7679 for UDGs instead of 7168 to 7679 as is usual This was especially useful in this program as it uses all but about 60 bytes as it stands That's also why no screen instructions are available

```
20 POKE52,29:POKE56,29:CLR
25 GOSUB4000
30 FORX=7424TO7432:POKEX,0:NEXT
40 FORX=7433TO7464
50 READA:POKEX,A
60 NEXT
70 POKE36869,255
100 PRINT"██  ┴──────┌─┐───        \█BATTLE SHIPS█/     █!!!!!!!!!!!!!!!!!!!!!!
!!"
110 V=36878:S1=V-1:S2=V-2:CO=30720:SV=1:POKEV+1,110
140 FORX=7901TO8077STEP22
150 FORY=0TO8
160 POKEX+Y,33:POKECO+X+Y,3:POKEX+Y+11,33:POKEX+Y+CO+11,3
170 NEXT:NEXT
180 PRINT"█████████████ 123456789   123456789"
190 FORX=1TO9
200 PRINT"█"CHR$(X+64)"█████████"CHR$(X+64):NEXT
210 DIM CS%(9,9)
220 FORT=1TOZ+1
230 X=INT(RND(1)*9)+1:Y=INT(RND(1)*9)+1
240 IFCS%(X,Y)=1THEN230
250 CS%(X,Y)=1
260 NEXT
265 FORT=1TOZ
270 PRINT"███████ SHIP #";T;"        ███████";
280 INPUTX$,Y$
290 X=ASC(X$)-64:Y=VAL(Y$)
295 IFX<1ORX>9ORY<1ORY>9THEN270
300 IFPEEK(7911+(X-1)*22+Y)=34THEN270
310 POKE7911+(X-1)*22+Y,34:POKE7911+(X-1)*22+Y+CO,7
320 NEXT
330 PRINT"████████████████████████   SHOTS █";S;"█ HITS █"PH:PRINT"██       SALVO";
SV"□"
340 FORD=1TO400:NEXT:PRINT"████████
350 PRINT"███████   MY SHOT:      ██████":POKEV,15:FORD=1TO800:NEXT
360 X=INT(RND(1)*9)+1:Y=INT(RND(1)*9)+1
370 L=7911+(X-1)*22+Y:PL=PEEK(L)
380 IFPL=35ORPL=36THEN360
400 GOSUB1000
410 IFPL=33THENPOKEL,35:POKEL+CO,3:GOSUB1500
420 IFPL=34THENPOKEL,36:POKEL+CO,2:CH=CH+1:GOSUB2000
425 PRINT"███████  SHOT :";CHR$(X+64);",";RIGHT$(STR$(Y),1)"
430 IFCH=ZTHEN2500
432 FORD=1TO1000:NEXT
435 PRINT"███████
440 PPINT"███████ YOUR SHOT:        ███████";
450 INPUTX$,Y$:S=S+1
460 X=ASC(X$)-64:Y=VAL(Y$)
470 IFX<1ORX>9ORY<1ORY>9THEN440
472 GETA$:IFA$=""THEN472
473 IFA$="█"THEN480
474 IFA$<>"█"THEN472
475 IFX<2ORX>8ORY<2ORY>8ORSV<1THEN472
476 PRINT"██████████          SALVO█"
477 G=X:H=Y:SV=0:FF=1:S=S+8:GOSUB1022:FORX=G-1TOG+1:FORY=H-1TOH+1
480 IFFF<>1THENGOSUB1000
490 L=7900+(X-1)*22+Y:PC=CS%(X,Y)
500 IFPC=0THENPOKEL,35:POKEL+CO,5:GOSUB1500
510 IFPC=1THENPOKEL,36:POKEL+CO,2:PH=PH+1:GOSUB2000:CS%(X,Y)=2
520 IFPH=Z+1THEN3000
525 IFFF<>1THEN528
526 NEXT:NEXT
528 IFFF=1THENFF=0:PRINT"████████
540 GOTO330
```

```
1000 PRINT"■■■■■■  FIRING MISSILE      "
1005 POKEV,15:FORT=255TO210STEP-.1:POKES1,T
1010 NEXT
1020 POKES1,0:RETURN
1500 PRINT"■■■■■■   MISSED !!         "
1505 FORT=15TO0STEP-.1:POKES1,225:POKEV,T:POKES1,230:NEXT
1510 POKES1,0:POKEV,15
1520 RETURN
2000 PRINT"■■■■■■   HIT !!            "
2005 FORT=15TO0STEP-.1
2010 POKES1,210:POKEV-13,40:POKEV,T:POKES1,215:POKEV-13,30
2020 NEXT:POKES1,0:POKEV+1,110
2030 POKEV,15
2040 FORT=1TO3
2050 FORM=180TO225STEP.2
2060 POKES2,M
2080 NEXT:POKES1,0
2090 FORD=1TO100:NEXT
2100 NEXT
2110 POKES2,0:RETURN
2500 PRINT"■■■■■■  I'VE WON !!!!!   "
2510 POKEV,15:FORX=128TO255STEP.3:POKES2,X:NEXT
2520 PRINT"■□ HERE'S MY OTHER SHIPS"
2530 FORX=1TO8:FORY=1TO8
2540 IFCS%(X,Y)=1THENPOKE7901+(X-1)*22+Y,34:POKE38621+(X-1)*22+Y,7
2550 IFCS%(X,Y)=1THENPOKES2,200:FORD=1TO200:NEXT:POKES2,0:FORD=1TO600:NEXT
2560 NEXT:NEXT
2570 PRINT"■■■■■■   ANY KEY           "
2580 POKE198,0:WAIT198,1:POKEV-8,248
2600 PRINT"■■■■■ HIT 'Y' TO PLAY AGAIN"
2610 GETA$:IFA$="Y"THENPOKEV+1,27:RUN
2620 GOTO2610
3000 PRINT"■■■■■■ YOU'VE WON          "
3010 FORX=128TO255STEP.3:POKES2,X:NEXT
3020 PRINT"□■   ANY KEY         "
3030 GOTO2580
3500 DATA129,66,60,0,128,68,60,0
3510 DATA0,4,14,255,126,60,0,0
3520 DATA66,36,24,146,214,108,82,25
3530 DATA137,82,116,62,255,126,60,0
4000 PRINT"■■■    BATTLE SHIPS"
4010 PRINT"■■    BY AL PLATTNER"
4020 PRINT"■■■  FIRE - 'F1'"
4030 PRINT"■  SALVO-   'F3'"
4100 PRINT"■■■  SHIPS 1-8 "
4110 INPUTZ:IFZ<1ORZ>8THEN4100
4120 RETURN
```

Back to School

Five educational programs to brush up your knowledge — of biology, German, maths and science

Bodyswop 48K Spectrum £7.95

Sinclair, 25 Willis Rd, Cambridge CB1 2AQ

This particular program is aimed at a very narrow age group, children between 5 and 8 years old albeit there might be a lot of them There are three parts to the program look, spell, and boggle The main object is to get a child to understand six words, ear, eye, leg, head, body and tail In the first part six animals demonstrate the different parts of the body which the words represent

After each demonstration the child can participate by choosing the correct part out of the six displayed This is done by pressing any key when the appropriate word is outlined.

Spell is the second part This is where the bodyswop comes in Each animal is shown twice on the screen One of the animals is correct in every detail and the other has a part missing, or a part of another animal The child has to type in the name of the missing part, either from a requested list, or from memory

The final part is a one or two player game called Boggle Each child either accepts or rejects a part of the boggle when it is offered them

I didn't think that the program was very user friendly and the rewards were meagre. **B B**

instructions	100%
graphics	90%
playability	80%
value for money	75%

★ ★ ★

Intermediate German Spectrum £6.95

Scisoft, 5 Minster Gardens New thorpe, Eastwood, Notts

This is a disappointment It seems to combine all the most dreadful features of teaching texts with some very uninteresting presentation and careless programming.

You are offered four locations in order to test your understanding and vocabulary You may choose one of three levels on which to work, and this is work

You are presented with sentences from a story with words missed out, and which you must supply Make a mistake, and you get no help After several sentences the whole story is presented in German or a translation is available in often stilted German

Alternatively you must translate a list of German words into English Type something silly in, and you get a "Who is playing about?" error message, or, in one section, type in a respectable sentence, instead of single word answer, and the program crashes

The final option allows the examination of a pretty crude picture on which questions are based If this was the work of a teacher for classroom use, then the lack of programming sophistication could be forgiven, but the dullness not. **D.M**

instructions	70%
presentation	50%
ease of use	80%
value for money	50%

★ ★

Estimator Racer 16K Spectrum £4.95

Sinclair, Stanhope Rd. Camberly, Surrey GU15 3PS

Classed as an educational program for ages five to fourteen, this is a highly entertaining game for a much wider age group You choose from four racing cars, from formula 1 to the slower formula four Next you have a choice from six mathematical operations, ranging from addition, to multiplication and division in the same sum

You can then either go for a practice run, or enter the full rally On the practice run you have a choice of the road conditions, including oil slicks rocks on the track, and night driving

Once in the rally you are in oneof four lanes each with a sum in it Underneath the tracks are the numbers which go to make up the sum these are in the form X+Y, according to your earlier choice You steer your car to the lane with the number nearest to the sum shown, hence the term estimator in the title

Speed is under your control with a constant showing of time lapsed, and distance, in kilometres, travelled Every half kilometre a warning sounds, if you are not in the correct lane disaster befalls you

An excellent game, excellent programming **B B**

instructions	100%
graphics	100%
playability	100%
value for money	100%

★ ★ ★ ★ ★

Intermediate Science Spectrum £6.95

Scisoft 5 Minster Gardens New thorpe, Eastwood, Notts

An interesting mixture of chemistry and biology Choose from name, symbol, atomic weight, group and form, of an element, from name, habitat, movement, structure, saprophyte parasite of invertebrate animals from the database

The computer searches for any entry which satisfies the conditions you specified It works quickly, and the results are printed to the screen, though output to a printer would have been useful

The other two programs are based on an adventure format, and look identical Not a good motivational point In one you have to protect a 'bug' whilst wandering round Mystery Mansion Each room has different conditions and the action you take to protect the bug determines whether it lives or dies Similarly, the selection of objects found is determined by scientific knowledge

The final program deals with your attempt to pollinate a plant and here again your knowledge will help you as you move through the house

The trouble with using a game concept, is that it immediately draws comparison with a game in presentation terms This just doesn't stand up **D M**

instructions	95%
presentation	80%
ease of use	90%
value for money	80%

★ ★ ★ ★

Intermediate Maths Spectrum £6.95

Scisoft, 5 Minster Gardens New thorpe, Eastwood, Notts

Another multi program package from Scisoft which allows practice with tessellations, simple algebra, graphs of simple equations, a number line and oddly, a simple business simulation

Unfortunately, the side with the tessellation and number line program refused to load after the business simulation This however, was most enjoyable and deals with the production of frizbees, and the balancing of production, advertising, sales and capital acquisition I played it for over an hour, enjoying watching the graphs grow!

The number machine responds to a hidden equation, and by thinking carefully about the number input, you can deduce the equation from three choices given, well presented and interesting The accompanying program to draw graphs of the same type of equation is by contrast rather sombre, though undoubtedly well done Whether or not it would tempt the reluctant learner outside the classroom is a moot point

All the programs seen were well error trapped, though there was the odd grammatical error In common with the other suites of programs from Scisoft, a save-and use with Microdrive option would be most welcome They take ages to load

Overall, rather a mixed bag

D M

instructions	85%
presentation	85%
ease of use	100%
value for money	80%

★ ★ ★ ★

Commodore calendar

Look into the past or future with Philip Abel's program for the Commodore 64

This is a utility program for the Commodore 64 which enables you to work out days of the month right back to the year 1760.

It can display any month of any year after 1760 inclusive and can even forecast the future. Using this program you'll be able to find out what day of the week you were born or even what day your birthday will be in the year 2000.

Firstly you enter the year and then when prompted you enter the month. Type in either the full name or the first three letters. After a pause the screen will display the month you have chosen. The computer takes longer to work out dates in the distant future.

So if you want to astonish your friends by telling them on which day of the week the battle of Trafalgar was, then this is the program for you.

How it works

10 sets up data on months
20-30 initial display
40-57 input, check year and month
80-195 work out first day in chosen month
200-300 display month
310-320 return to beginning
1000-1110 data on months
2000-2020 subroutine to help work out first day of month chosen

Variables

A,N loops
DA day
MOS month chosen
MO() lengths of months
MOS() month names
PO position along screen
TS month and year chosen
YE year chosen

M
Tu
W
Th
F
Sa
Su
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```
5 DIMMO$(12),MO(12)
10 FORA=1TO12:READMO$(A):READMO(A):NEXTA
15 POKE53280,0
19 REM CLR
20 PRINT"■                    CALENDAR"
29 REM CRD
30 PRINT"■  I CAN DISPLAY THE MONTHS OF ANY YEAR  AFTER 1760 INCLUSIVE "
39 REM CRD
40 INPUT"■YEAR";YE
44 REM   3*CRU
45 IFYE<1760THENPRINT"□□□":GOTO40
46 REM CRU
47 PRINT"□                    "
49 REM CRU
50 INPUT"□MONTH";MO$
55 FORA=1TO12:IFMID$(MO$,1,3)=MID$(MO$(A),1,3)THEN80
57 NEXTA:GOTO20
59 REM CLR
60 PRINT"■PLEASE WAIT"
80 IFYE/4=INT(YE/4)THENMO(2)=29
90 DA=7
95 IFYE=1760THEN140
100 FORA=1760TO(YE-1)
110 IFA/4=INT(A/4)THENGOSUB2000
120 GOSUB2000
130 NEXTA
140 A=1
150 IFMID$(MO$,1,3)="JAN"THEN200
160 IFMO(A)=28THEN185
165 IFMO(A)=29THENGOSUB2000
170 IFMO(A)=30THENGOSUB2000:GOSUB2000
180 IFMO(A)=31 THENGOSUB2000:GOSUB2000:GOSUB2000
185 A=A+1
190 IFMID$(MO$(A),1,3)=MID$(MO$,1,3)THEN200
195 GOTO160
199 REM CLR
200 PRINT"■                    CALENDAR"
201 T$=MO$(A)+STR$(YE)
204 REM CRD
205 PRINT"■";:PRINTTAB(20-(INT((LEN(T$))/2)));T$
209 REM CRD
210 PRINT"■    MON  TUE  WED  THU  FRI  SAT  SUN"
219 REM CRD
220 PRINT"■";:PO=DA*5
230 PRINTTAB(PO);"]    ";
240 FORN=2TOMO(A)
250 PO=PO+5
260 IFPO>39THENPRINT:PRINT:PRINTTAB(4);:PO=5
270 IFN<10THENPRINTN;"   ";
280 IFN>9THENPRINTN;" ";
282 NEXTN
285 PRINT
299 REM   5*CRD
300 PRINT"■■■■■PRESS ANY KEY..."
310 GETR$:IFR$=""THEN310
320 RUN
1000 DATAJANUARY,31
1010 DATAFEBRUARY,28
1020 DATAMARCH,31
1030 DATAAPRIL,30
1040 DATAMAY,31
1050 DATAJUNE,30
1060 DATAJULY,31
1070 DATAAUGUST,31
1080 DATASEPTEMBER,30
1090 DATAOCTOBER,31
1100 DATANOVEMBER,30
1110 DATADECEMBER,31
2000 DA=DA+1
2010 IFDA=8THENDA=1
2020 RETURN
```

Around the world

Pack your bags — we're off on a transcontinental trip. It's all go and you'll need to travel light

World Geography CBM 64 £7.95

Superior Software, Dept C,
Ground Floor, Regent Hse,
Skinner La, Leeds

Do you know the capital of Kiribati? Neither do I. I don't know it's population either. As both these facts form the basis of this program I didn't do very well.

The aim is to test your knowledge of world geography. It has eight levels of difficulty and options to answer questions on the capitals of countries, populations or both. The screen consists of a world map, boxes to show your level, the number of the question, and your overall score.

When you are asked a question a light flashes and a bell rings. There are eight levels starting at number one with the more well known countries e.g. UK, France, USA, Japan and proceeds through the less well known i.e. United Arab Emirates, Pakistan, Bangladesh and Belize. Level eight contains many really obscure islands. Your other option is to key in the population of the countries in question. Even with an error allowance of twenty per cent this is very difficult.

Considering the great variety I found this limited. Any incorrect response is not corrected, thus you cannot learn from your mistakes. **M.W.**

instructions	75%
graphics	75%
ease of use	80%
value for money	75%

★ ★ ★

Travel With Trashman Spectrum £5.95

New Generation, The Brooklands, 15 Sunnybank, Lyncomb Vale, Bath BA2 4TD

Trashman is back with a new range of rubbish to collect! This time he travels to different parts of the world, limited only by the amount of money he has. You can earn him more by helping him complete a task in each city. As a result he can fly to even more exotic places!

In Paris, he must collect edible frogs; in Munich, empty beer glasses; in Jerusalem, tear sodden tissues at the Wailing Wall, in Madrid, flowers strewn in the bullring. The snag is that in each location there are people to be avoided, be they Russian guards, waitresses, or, in the case of the bullring, an irate bull!

Graphics are super and in 3D, although the figures are in one colour, to get round the Spectrum's hardware, the result is very impressive. Although the principle of each sheet is the same, collect the trash, avoid the people, you certainly won't get fed up with this in a hurry. For one thing the backgrounds are too beautifully done.

The game features all the usual joystick protocols, excellent instructions, and is very addictive. Magic! **D.M.**

instructions	100%
graphics	100%
playability	100%
value for money	100%

★ ★ ★ ★ ★

Intermediate Geography Spectrum £6.95

Scisoft, 5 Minster Gardens, Newthorpe, Eastwood, Notts

All previous tapes from Scisoft have been good value for money and well written to boot! This is no exception.

Designed for 9- 14-year-olds, this suite of programs contains a simple countries of the world database based on population, capital city, and area, a simulation of the spread of Dutch Elm disease, Around Britain in 48 hours, a names places and distances game, and Treasure Hunt, which teaches and tests map skills. Each deserves a review all to itself, which is a measure of its quality and depth. All the programs are designed to get the most of the available data, and as a result, can be used in two or three ways.

Happily for the user, they are well documented in a useful manual, and are fully error trapped. It's clear that whoever wrote them is used to inquisitive fingers and silly responses.

Above all, the programs are interesting to use, either because they are so well presented, or because they take the form of a game. The games aren't thinly disguised teaching programs but as good as many commercial entertainment offerings. In using them, however, you or your child will undoubtedly gain in skill and knowledge. What more can you ask? **D.M.**

instructions	100%
graphics	100%
ease of use	100%
value for money	100%

★ ★ ★ ★ ★

UK Geography CBM 64 £7.95

Superior Software, Dept C,
Ground Floor, Regent Hse,
Skinner La, Leeds

This is a program to test your knowledge of the geography of the British Isles. It is divided into five sections, each designed to test a specific area. There are two finding sections, two naming sections and a section to locate mountain ranges.

The first two deal with the location of one hundred towns in the UK. In part one a map of the British Isles is displayed and a flashing light gives the location of the town to be names. You are told how many letters in the name and then you type it in. I found this section to be very intolerant. Newcastle and Newcastle-on-Tyne were not accepted, the answer required was Newcastle upon-Tyne. Find the town reverses the last section. You have the same format as parts one and two, but you use counties instead of towns.

The final section deals with locating named highland regions. You have to put a small dot on the region specified — rather like spot the ball. Overall this program could have been a lot better. **M.W.**

instructions	80%
graphics	60%
ease of use	50%
value for money	75%

★ ★ ★

Caesar's Travels CBM 64 £7.95

Mirrorsoft, Holborn Circus, London EC1P 1DQ

Caesar, Mirrorsoft's intrepid rodent exterminator is on the move again. This time he is part of their Early Learning Series and he's teaching reading.

Caesar's Travels comes as a book and cassette set. The book will make good bed time reading for several nights as it is not just one story. It starts with the cat being thrown out of his home because he is a failure as a mouser and leap-frogs the reader through the book until he comes to one of the endings. There are eighteen stories in all linked at various points and all well written.

The cassette follows the same tales but in a simplified form. There is a card to fit over the function keys. This has the commands needed and is easy to use. The sound and graphics capabilities of the 64 are put to good use. The cat miaows as he swims to shore and you hear the fairground sounds when Caesar is stuck in the big wheel.

This is a beautiful program, well thought out, educational and entertaining. **A.W.**

instructions	70%
graphics	95%
ease of use	90%
value for money	95%

★ ★ ★ ★ ★

BASIC animation

Jon Revis shows you how to make characters come to life. You'll feel deep satisfaction once your own designs are mobile — and it's easy!

In HCW 91 I described a number of techniques which could be employed to produce multi-coloured user defined characters Having gone to all the trouble of creating our little characters it seemed a shame to leave them lifeless This week we will be taking a look at the methods of animation available to the BASIC programmer

The theory behind the animation of user defined characters is quite simple. You merely print a character in one position, erase it and then reprint the same character a short distance away from its original position When carried out in rapid succession this process creates the illusion of continuous motion

Program 1 will animate the multi-coloured character of the man we created in HCW 91 The program is described below in some detail

Line 30 PROCinit: When animating a character it is always important to know where a character is and where it was Knowing where it is allows you to check whether it has collided with another character Knowing where it was enables you to erase the old character by printing a blank square, the same colour as the background, in its old position The variables manX% and manY% are the character's present co-ordinates The variables oldmanX% and oldmanY% refer to the character's previous position Both are set to the same initial co-ordinates in PROCinit, in this case the centre of the screen

At line 490 the statement VDU5 is issued This combines the text and graphics cursors and allows us to print our character anywhere on the graphics screen, e g a 1280 x 1024 grid The VDU5 is also essential in the creation of multi-coloured characters as it enables us to superimpose the four separate characters which constitute our man

The final line of PROCinit produces a white background.

Line 40 PROCcharacters: PROCcharacters contains the four VDU23 statements which, when superimposed, create the man It also contains the VDU23 definition for a blank square This will be used to erase the old image of the man before printing him at new co-ordinates

Line 50 PROCdefine character: This is the procedure which was developed in the last article. Its purpose is to combine colour changes, cursor movements and separate user defined characters, in order to produce a multi-coloured user defined character This character can be printed at any time merely by using the statement PRINT man$

It is based on the fact that CHR$ can be used for a multitude of purposes, e.g. CHR$(18),CHR$(0),CHR$(1) is equivalent to GCOL0,1 or change graphics colour to red.

CHR$(8) will move the cursor back one character position CHR$(224),CHR$(8), CHR$(225) etc will print character 224, move the cursor back one space to its original position and print the next character, 225, directly on top of character 224.

By clever manipulation of the CHR$ statement these uses can be combined, allowing all the cursor movements and colour changes required to create our multi-coloured man to be contained within the variable man$ The DATA which contains the colour changes, cursor movements, and characters is held in line 460 Each CHR$ value is concatenated into the variable man$ at line 430 of the program.

Line 60 prints an initial image of the man in the centre of the screen at the start of the program If it didn't then the screen would be blank until a key was pressed

Lines 70-90 are the main program loop which, in this example, merely contains the procedure PROCread_keyboard Had we written a complete game than the loop would also contain the procedures which move the characters not controlled by the player.

Line 80 PROCread keyboard. The first line of the procedure, line 190, assigns the value zero to the variable FLAG%, FLAG% is used to signal to the computer whether any keys have been pressed during the execution of PROCread_keyboard This will be made clearer as we examine the rest of the procedure

Line 200 checks whether a key is being pressed, and if so it assigns the character corresponding to that key to the variable a$ The value in brackets following the INKEY$ is the length of time the computer will pause and scan for a key press The smaller the value, the shorter the pause. In an arcade game, where speed is essential, the shortest possible delay is always used

The next few lines **210-280** examine the contents of a$ and compare them with the keys that we are looking for, in this case "Z", "X", ":", and "/", corresponding to left, right, up and down

Line 210 checks whether the "Z" key has been pressed If it has then the value of the X co-ordinate of the character man$, manX% is reduced by 32 This is the equivalent of moving the character half a character position to the left You will also notice that the variable FLAG% is given the value of 1 This tells the computer that one of the four keys responsible for moving the character has been pressed

Line 220: As you know, the graphics screen consists of a 1280 x 1024 grid Line 220 prevents the value of manX% from falling below zero If it were allowed to fall below zero then the character would be allowed to walk off the left hand side of the screen Great if you want to cheat! The same type of check is made at lines 240, 260 and 280, checking the right hand, bottom, and top edges of the screen respectively.

Line 290: Finally we get to the line which checks the variable FLAG$ If FLAG% still contains zero then we don't execute PROCprint_man When speed is of the essence, why print the man again when he hasn't moved?

However, should FLAG% contain the value 1, PROCprint_man will be executed as we know that one of our four keys has been pressed

Lines 110-170 contain the procedure PROCprint_man

Line 120 selects graphic colour 7 (white)

Line 130 moves to the old co-ordinates of our character — oldmanX% and oldmanY% — and proceeds to print a solid square using the colour white As we are using a white background this erases the old image of our man

Line 140 moves to the present co-ordinates of our character, manX% and manY% as determined in PROCread_keyboard, and prints the character held in man% Since man% contains the information responsible for colouring the character we are not required to issue a GCOL statement to change his colour

Lines 150 and 160: It is at this point that we pass the contents of manX$ and manY% to their respective oldman counterparts In this way we know where to print our white square the next time we visit PROCprint_man

In **program 1** we used INKEY$(0) to scan the keyboard and detect any key depressions We then checked the contents of the variable a$ to see if it contained one of the four characters that we are concerned with, namely "Z", "X", ":", and "/"

Phenomenal increases in the speed at which our character moves, can be achieved by using another version of the INKEY statement The version to which I am referring takes the format INKEY(-n)

Note that the value in brackets is a minus value. This value is the code which corresponds to one particular key, e g -97 is the code for "Z" A full list of these codes is printed on page 275 of the User Guide **Line 210** can now be replaced by

```
10 REM PROGRAM 1

20 MODE2

30 PROCinit

40 PROCcharacters

50 PROCdefine_character

60 MOVE 640,512 : PRINTman$

70 REPEAT

80   PROCread_keyboard

90   UNTIL FALSE

100 END

110 DEF PROCprint_man

120 GCOL0,7

130 MOVE oldmanX%,oldmanY% : PRINTCHR$(255)

140 MOVE manX%,manY% : PRINT man$

150 oldmanX% = manX%

160 oldmanY% = manY%

170 ENDPROC

180 DEF PROCread_keyboard

190 FLAG% = 0

200 a$ = INKEY$(0)

210 IF a$ = "Z" THEN manX% = manX% - 32 : FLAG% = 1

220 IF manX% < 0 THEN manX% = 0

230 IF a$ = "X" THEN manX% = manX% + 32 : FLAG% = 1

240 IF manX% > 1200 THEN manX% = 1200

250 IF a$ = "/" THEN manY% = manY% - 16 : FLAG% = 1

260 IF manY% < 30 THEN manY% = 30

270 IF a$ = ":" THEN manY% = manY% + 16 : FLAG% = 1

280 IF manY% > 1000 THEN manY% = 1000

290 IF FLAG% = 1 THEN PROCprint_man

300 ENDPROC

310 DEF PROCcharacters

320 VDU23,224,60,36,0,0,0,0,0,60 : REM Hair + Shoes

330 VDU23,225,0,24,24,0,0,66,0,0 : REM Face + Hands

340 VDU23,226,0,0,0,126,90,0,0,0 : REM Shirt

350 VDU23,227,0,0,0,0,0,24,24,0  : REM Trousers

360 VDU23,255,255,255,255,255,255,255,255,

    255 : REM Blank square

370 ENDPROC

380 DEF PROCdefine_character

390 RESTORE460

400 man$

410 FOR N% = 1 TO 18

420   READ char%

430   man$ = man$ + CHR$(char%)

440   NEXT N%

450 ENDPROC

460 DATA18,0,0,224,8,18,0,5,225,8,18,0,2,226,

    8,18,0,4,227

470 DEF PROCinit

480 manX% = 640 : manY% = 512 : oldmanX% = 640 :

    oldmanY% = 512

490 VDU5

500 GCOL0,135 : CLS : REM White Background

510 ENDPROC
```

IF INKEY(-97) THEN manX% = manX% - 32 : FLAG% = 1

The increase in execution speed is achieved since the computer now checks only four keys each time it passes through PROCread_keyboard. When using INKEY$(0) every key on the keyboard must be checked This takes time, even for a computer

Lines 180 to 300, DEF PROCread_keyboard, can therefore be replaced by the following lines in an attempt to turbo-charge our program

```
180 DEF PROCread_keyboard

190 FLAG% = 0

200 IF INKEY(-98) THEN manX% = manX% - 32 . FLAG% = 1

210 IF manX% < 0 THEN manX% = 0

220 IF INKEY(-67) THEN manX% = manX% + 32 : FLAG% = 1

230 IF manX% > 1200 THEN manX% = 1200

240 IF INKEY(-105) THEN manY% = manY% - 16 :FLAG% = 1

250 IF manY% < 30 THEN manY% = 30

260 IF INKEY(-73) THEN manY% = manY% + 16 : FLAG% = 1

270 IF manY% > 1000 THEN manY% = 1000

280 IF FLAG% = 1 THEN PROCprint_man

250 ENDPROC
```

When writing a game it is very unlikely that you are going to move your characters around on a pure white background Depending upon the type of game being written you may have designed an elaborate motorway and river complex, as in Frogger, or a Donkey Kong ladders and levels scene It is at this point that your next headache will begin

By adding the following procedure to program 1 we can print the word "Indestructible" across the screen. This will serve as our background for the purpose of our example

```
520 DEF PROCmessage

530 GCOL0,6

540 MOVE 20,400 : PRINT"Indestructible
```

```
550 GCOL0,1

560 MOVE 208,405 : PRINT"indestructible"

570 ENDPROC
```

By adding the line 55 PROCmessage we can call this procedure and print the text on the screen.

Line 530 selects the graphic colour cyan.

Line 540 then moves to position 200,400 and prints the word "indestructible" in cyan.

Line 550 selects the graphic colour red.

Line 560 then moves to a position slightly to the right and above the first co-ordinates and superimposes the word "indestructible" on the first image but in the colour red.

This 3D style text is just another of the tricks made possible by the VDU5 statement.

As we move our little man over the word you will find that he erases large chunks of the text. This is due to the fact that we are using a white square to erase his image. Fortunately the BBC provides us with a means of tackling this problem, but it's not exactly simple!

As you already know the GCOL statement is followed by two values. The first value determines how the colour is to be placed upon the screen, while the second is the number of the colour to be used.

The values 0 to 4 can be used as the first parameter of the GCOL statement. Of these we are only interested in 0 and 3, which represent "plot the specified colour" and "Exclusive-OR the specified colour with that already there". Up to this point we have been using option 0, which has instructed the computer to print the next character in the colour specified by the second parameter of the GCOL statement.

When using option 3 of the GCOL statement the computer takes the number of the colour you have specified in the command, EORs it with the number of the background colour, and then prints the next character in the colour represented by the number which was the result of the EOR calculation. I told you it was simple!

What does this mean to us? In a nutshell it means that if we use the statement GCOL 3,2 to print a character in green, when using a white background the actual colour printed will be magenta. This is due to the fact that 7 (white) when EORed with 2 (green) results in 5 (magenta)

0 1 1 1 binary for 7 (white)
0 0 1 0 binary for 2 (green)

0 1 0 1 binary for 5 (magenta)

When EORing two numbers, two bits which are the same result in zero, while two bits which are different result in one. By making the following amendments to the program you will see the effect of using option 3 of the GCOL statement.

Erase line 120
Line 130 should be altered to read:

130 MOVE oldmanX%,oldman Y% PRINT man$

When using GCOL option 3 the old image of the man can be erased by printing the same character on top of itself. We no longer require our white square.

By replacing the DATA statement at line 460 with the following we will now be using GCOL option 3

460 DATA 18,3,0,224,8,18,3,5, 225,8,18,3,2,226,8,18,3,4, 227

When running this new program you will find that the character can be moved over the text without erasing any of it. This now means that when you have spent hours producing a spectacular background it will no longer have chunks annihilated as soon as someone moves a character across it. It is just a pity that our little man is no longer composed of the colours we created him in.

Each of the colours printed is being EORed with the white background. To redraw him in his original colours we must calculate which new colours, when EORed with white, will produce our old colours.

I don't know about you, but I certainly didn't buy a computer so that I could mess about with pencil and paper grappling with the finer points of binary.

The following program will ask you for the number of the background colour (use the foreground colour numbers 0 to 15). It will then ask for the number of the colour in which you wish the character to be printed. The program will then calculate the number of the colour which must be printed in order to produce the desired colour.

```
 1 REM ** MODE 2 'EOR' Colour Calculator **

10 MODE7

20 INPUT"Background colour ?" background

30 INPUT"Foreground colour required ?" foreground

40 newcolour = background EOR foreground

50 PRINT''"Colour to print = ";newcolour
```

Note: This program is not to be merged with program 1 — it's merely a utility program which will allow you to determine the result of EOR calculations for MODE 2 colours.

Using our colour calculator we can replace line 460 with the following

460 DATA 18,3,7,224,8,18,3,2, 225,8,18,3,5,226,8,18,3,3, 227

The DATA statement now contains the new colours, which when EORed with white, will result in our original colours. The man should therefore appear as he did before, and will still be able to walk through the text without erasing it.

With the techniques which have been outlined in these last two articles you should now be able to produce fast, multi-coloured, characters which don't devastate the background whilst moving over it. And all without once mentioning the black art of machine code!

acorn electron

Mission: Greenham Common

Nellie, the peace protestor, is trying to steal the bombs inside the Greenham Common airbase. In Stephen Gray's program you get the chance to help her

Tension is high around Greenham Common airbase and you, as one of the peace protestor, are ready to risk life and limb to get inside the perimeter fence

You play Nellie, an intrepid protester, and your mission is to get inside the base and steal all the bombs

How it works	
10-220	initialisation
230-320	main loop
330-495	Nellie subroutine
500-560	tank 1 subroutine
570-630	tank 1 subroutine
640-680	print bomb subroutine
690-830	draw screen subroutine
840-1130	instructions and initialisation subroutine
1140-1180	alarm set off subroutine
1190-1290	bomb exploded subroutine
1300-1350	level cleared subroutine
1360-1490	end of game, print high scores and restart
1500-1700	new high score subroutine

It's a very dangerous job because the bombs are very unstable and must be lifted from behind or they will explode

You must also be very careful to avoid the perimeter fence and the tank as these will set off alarms

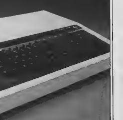
The game gets much harder as you progress If you reach level 10 two tanks will chase you so you have to be very nimble on your feet You must also collect more and more bombs as you make your way through the airbase When you've finished picking up bombs you've still got to make a bid for freedom by the main gate where your friends are awaiting your safe return.

Control keys are Z for left, X for right, : for up and / for down

Variables	
L%	level of game
LI%	lives
S%	score
BO%	bombs collected
X%,Y%	Nellie's co-ordinates
J%	way Nellie is facing
C%	alarm set off
N%	Nellie's leg position
BOM%	bomb exploded
X1%,Y1%	tank 1 co-ordinates
X1%,Y2%	tank 2 co-ordinates
A1%	tank 1 move
A2%	tank 2 move
B%	bomb needed to clear level
H%,K%	Nellie's last co-ordinates
M%	if Nellie moved
T1%,S1%	tank 1 last co-ordinates
T2%,S2%	tank 2 last co-ordinates
B,C,G,F,H,A,A%	various
HI%(1-5)	high scores
N$(1 5)	names of high scorers
T$	tank character
W$,BOM$	black blocks
V$,X$,Y$,Z$	Nellie characters

Hints on conversion

PROC is similar to GOSUB except it is called by name, not line number
ENDPROC is similar to RETURN
COLOUR and **GCOL** are similar to the Spectrum INK and PAPER integer variables are used here, i e those that end in %
CHR$ 224-255 are user defined graphics characters
SOUND is self explanatory
REPEAT.. UNTIL is a BBC BASIC structure which can be simulated using IF THEN
TIME is a keyword used to read the BBC's clock



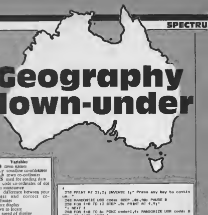
```
   10 REM ********************
   20 REM * GREENHAM COMMON *
   30 REM * By Stephen Gray *
   40 REM *                 *
   50 REM *       FOR       *
   60 REM *                 *
   70 REM *  BBC Model  B   *
   80 REM ********************
   90ONERROR RUN
  100 MODE7
  110 PROCI
  120 L%=0:LI%=3:S%=0
  130 MODE 1
  140 IF LI%=0 MODE7:PROCD:GOTO 1360
  150 BO%=0:X%=1104:Y%=498
  160 J%=1:C%=0:N%=0
  170 BOM%=0:X1%=64:Y1%=160
  180 X2%=64:Y2%=648:A1%=0:A2%=2
```

```
  190 PROCS
  200 B%=L%+4:FOR A%=1 TO B%:PROCB:NEXT
  210 MOVE X%,Y%:PRINT;V$
  220 VDU 19,3,2,0,0,0,19,1,5,0,0,0,19,2,3,0,0,0,19,0,0
,0,0,0
  230 PROCM
  240 IF X%>1217 PROCAL:GOTO130
  250 PROCG1
  260 IF POINT(X%,Y%)=3 C%=1
  270 IF L%>9 PROCG2
  280 IF C% PROCAL:GOTO150
  290 IF BOM% PROCBOM:GOTO130
  300 IF LI%=0 MODE7:PROCD:GOTO1360
  310 IF BO%=B% AND X%=1216 PROCL:GOTO130
  320 GOTO250
  330 DEF PROCM
  340 IF POINT(X%,Y%)=2 OR POINT(X%-32,Y%)=2 OR POINT(X
%,Y%-32)=2 OR POINT(X%-32,Y%-32)=2 BOM%=1:ENDPROC
```

```
  350 HX=XX:KX=YX:MX=0
  360 IF NX=0 NX=1 ELSE NX=0
  370 IF INKEY(-98) XX=XX-32:JX=1:MX=1
  380 IF INKEY(-67) XX=XX+32:JX=2:MX=1:IF POINT(XX,YX)=
2 OR POINT(XX,YX-32)=2 SOUND2,5,140,5:MOVE XX,YX:PRINT
BOM$:BOX=BOX+1:SX=SX+10:MOVE 32,29*32:GCOL 0,0 ELSE GOT
O400
  390 PRINT;STRING$(10,CHR$255);STRING$(9,CHR$0):VDU10,
0,1,1;PRINT,BX
  400 IF INKEY(-73) YX=YX+32:NX=1
  410 IF INKEY(-105) YX=YX-32:MX=1
  420 IF POINT(XX,YX)=3 OR POINT(XX,YX-32)=3 OR POINT(X
X+31,YX)=3 OR POINT(XX+31,YX-32)=3 CX=1
  430 IF MX=0 ENDPROC
  440 ON JX GOTO450,480
  450 MOVE HX,KX:PRINT A$
  460 MOVE XX,YX:IF NX PRINT V$ ELSE PRINT X$
  470 ENDPROC
  480 MOVE HX,KX:PRINT A$
  490 MOVE XX,YX:IF NX PRINT Y$ ELSE PRINT Z$
  495 ENDPROC
  500 DEF PROCB1
  510 T1X=X1X:S1X=Y1X
  520 A1X=A1X+1:IF A1X<3 FOR A=1 TO 80:NEXT:GOTO 550 EL
SE A1X=0
  530 IF XX>X1X AND POINT(X1X+64,Y1X)=0 AND POINT(X1X+9
6,Y1X)=0 X1X=X1X+64 ELSE IF XX<X1X AND POINT(X1X-64,Y1X
)=0 AND POINT(X1X-96,Y1X)=0 X1X=X1X-64
  540 IF YX>Y1X AND POINT(X1X+32,Y1X+32)=0 AND POINT(X1
X-32,Y1X+32)=0 Y1X=Y1X+32 :GOTO550 ELSE IF YX<Y1X AND P
OINT(X1X+32,Y1X-32)=0 AND POINT(X1X-32,Y1X-32)=0 Y1X=Y1
X-32
  550 MOVE T1X,S1X:VDU 18,0,0,255,255:MOVE X1X,Y1X:PRIN
T T$
  560 ENDPROC
  570 DEF PROCB2
  580 T2X=X2X:S2X=Y2X
  590 A2X=A2X+1:IF A2X<3 FOR A=1 TO 40:NEXT:GOTO 620 EL
SE A2X=0
  600 IF XX>X2X AND POINT(X2X+64,Y2X)=0 AND POINT(X2X+9
6,Y2X)=0 X2X=X2X+64 ELSE IF XX<X2X AND POINT(X2X-64,Y2X
)=0 AND POINT(X2X-96,Y2X)=0 X2X=X2X-64
  610 IF YX>Y2X AND POINT(X2X+32,Y2X+32)=0 AND POINT(X2
X-32,Y2X+32)=0 Y2X=Y2X+32 ELSE IF YX<Y2X AND POINT(X2X+
32,Y2X-32)=0 AND POINT(X2X-32,Y2X-32)=0 Y2X=Y2X-32
  620 MOVE T2X,S2X:VDU 18,0,0,255,255:MOVE X2X,Y2X:PRIN
T T$
  630 ENDPROC
  640 DEF PROCB
  650 B=(RND(16)+1.5)*64:C=(RND(12)+1.5)*64
  660 IF POINT(B+16,C-16)<>0 OR POINT(B+48,C-16)<>0 GOT
O650
  670 GCOL 0,2:MOVE B,C:VDU 240,241:MOVE B+16,C:GCOL 0,
5:VDU 242
  680 ENDPROC
  690 DEF PROCS
  700 VDU23;8202;0;0;0;
  710 FOR A=1 TO 4:VDU 19,A,0,0,0,0:NEXT
  720 RESTORE 750
  730 FOR B=1 TO 12
  740 READ F,H:SOUND 1,7,F,H:NEXT
  750 DATA 21,4,33,2,21,6,21,4,33,2,21,6,25,2,32,2,25,2
,13,4,33,2,5,6
  760 VDU 5
  770 MOVE 32,32:GCOL 0,3
  780 FOR A=1 TO 58:VDU 254:NEXT
  790 FOR A=64 TO 864 STEP 32:MOVE 32,A:VDU 250:MOVE 12
16,A:VDU 254:NEXT
  800 MOVE 32,864:FOR A=1 TO 38:VDU 254:NEXT:GCOL 0,1:M
OVE 0,928:PRINT,SX;"    ";:FORA=1TOLIX:PRINTY$;:VDU9,11
:NEXT:GCOL0,1:MOVE736,928:PRINT;HIX(1):MOVE1184,928:PRI
NT;LX
  810 VDU 4:COLOUR 2:PRINT TAB(1,1);"    SCORE    LIVES
    HI-SCORE    LEVEL":PRINTTAB(38,16);:VDU 32,8,10,71,8
,10,65,8,10,84,8,10,69,8,10,32
  820 VDU 5
  830 ENDPROC
  840 DEF PROCI
  850 VDU23;8202;0;0;0;
  860 PRINT'   CHR$141;CHR$130;"    G R E E N H A M  C
O M M O N"
  870 PRINTCHR$141;CHR$130;"    G R E E N H A M  C O M
M O N"
  880 PRINT  CHR$131;"     By STEPHEN BODY"
  890 PRINT  CHR$129;"INSTRUCTIONS"
  900 PRINT "  Nellie the CND peace protester has     b
roken into Greenham Common airbase     Her mission is t
o steal the bombs while avoiding the tank and perimeter
 fence   which set off the alarm."
  910 PRINT" She must take the bombs from behind or  th
ey will explode,and when she has them all must escape t
hrough the gate."
  920 PRINT " PRESS SPACE TO START"
  930 A$=GET$:IF A$<>" " GOTO930
  940 DIMN$(5),HIX(5):FORA=1TO5:N$(A)="Fred":HIX(A)=100
:NEXT
  950 ENVELOPE 1,1,5,5,-5,5,5,5,10,10,0,-10,127,127
```

```
  960 ENVELOPE 2,1,127,-10,-10,1,12,12,10,10,0,-1,127,0
  970 ENVELOPE 3,1,127,-2,-2,1,60,60,127,0,-10,-10,127,
0
  980 VDU 23,255,255,255,255,255,255,255,255,255,23,240
,120,199,222,254,240,253,203,135,23,241,0,192,240,252,6
2,124,176,192,23,242,0,0,16,16,128,90,60,0,224,23,224,0
,0,20,0,40,252,60,0,23,226,0,0,0,62,6,2,0,24
  990 VDU 23,225,0,0,58,0,24,63,60,0,23,227,0,16,0,124,
96,60,0,24,23,228,28,63,61,125,28,20,23,49,23,229,28,15
9,253,29,124,60,60,200,23,230,56,252,188,191,56,40,232,
140,23,231,36,249,191,184,62,34,34,51
 1000 VDU 23,243,15,31,63,127,0,255,127,54,23,244,192,1
95,255,195,0,255,254,216,23,232,0,0,0,127,0,0,0,47,23,2
33,120,0,0,0,1,0,0,204,23,234,170,255,170,170,170,170,2
35,170
 1010 ENVELOPE 4,1,4,-2,-2,20,20,20,127,0,0,-127,127,0
 1020 ENVELOPE 5,1,60,-3,-3,1,10,10,127,0, 1,-1,127,0
 1030 ENVELOPE 6,1,0,0,0,1,1,1,127, 2,0,-1,120,105
 1040 ENVELOPE 7,1,0,0,0,1,1,1,60, 2,0,-1,120,90
 1050 W$=CHR$10+CHR$0+CHR$0+CHR$255+CHR$8+CHR$10+CHR$25
5
 1060 V$=CHR$10+CHR$0+CHR$1+CHR$224+CHR$8+CHR$10+CHR$0+
CHR$2+CHR$226+CHR$8+CHR$10+CHR$10+CHR$0+CHR$3+CHR$228
 1070 X$=CHR$10+CHR$0+CHR$1+CHR$224+CHR$8+CHR$10+CHR$0+
CHR$2+CHR$226+CHR$8+CHR$10+CHR$10+CHR$0+CHR$3+CHR$229
 1080 Y$=CHR$10+CHR$0+CHR$1+CHR$225+CHR$8+CHR$10+CHR$2+
CHR$2+CHR$227+CHR$8+CHR$10+CHR$10+CHR$0+CHR$3+CHR$230
 1090 Z$=CHR$10+CHR$0+CHR$1+CHR$225+CHR$8+CHR$10+CHR$0+
CHR$2+CHR$227+CHR$8+CHR$10+CHR$10+CHR$0+CHR$3+CHR$231
 1100 BOM$=CHR$10+CHR$0+CHR$0+CHR$255+CHR$235+CHR$8+CHR
$8+CHR$10+CHR$255+CHR$255
 1110 T$=CHR$10+CHR$0+CHR$3+CHR$243+CHR$244
 1120 VDU23;8202;0;0;0;
 1130 ENDPROC
 1140 DEF PROCAL
 1150 LIX=LIX-1
 1160 SOUND 1,4,100,60
 1170 FOR B=1 TO 6000:NEXT
 1180 ENDPROC
 1190 DEF PROCBOM
 1200 SOUND 0,6,6,20
 1210 FORA=1 TO 10
 1220 VDU 19,0,1,0,0,0
 1230 FOR A=1TO 130:NEXT
 1240 VDU 19,0,3,0,0,0
 1250 FORB=1 TO 130:NEXT
 1260 NEXT
 1270 VDU 19,0,0,0,0,0
 1280LIX=LIX-1
 1290 ENDPROC
 1300 DEF PROCL
 1310 *FX15
 1320 SOUND 1,2,60,90
 1330 FOR B=1 TO 5000:NEXT
 1340 LX=LX+1:IF LX=31 LX=1
 1350 ENDPROC
 1360 MODE7
 1370 VDU 23;8202;0;0;0;
 1380 PRINTCHR$134;CHR$157;CHR$132;""
 1390 PRINTCHR$134;CHR$157;CHR$132;CHR$141;"   G R E E
N H A M  C O M M O N"
 1400 PRINTCHR$134;CHR$157;CHR$132;CHR$141;"   G R E E
N H A M  C O M M O N
 1410 PRINTCHR$134;CHR$157;CHR$132;""
 1420 PRINT  CHR$131;"HIGH SCORES"
 1430 FOR A=1 TO 5
 1440 PRINT ;" ";A,HIX(A);"    ";N$(A)
 1450 NEXT
 1460 PRINT   CHR$129;CHR$136;"      Press SPACE to sta
rt"
 1470 *FX15,1
 1480 A$=GET$:IF A$<>" " GOTO1470
 1490 GOTO120
 1500 DEF PROCO
 1510 PRINT    CHR$141;CHR$129;"        G A M E    O
V E R"
 1520 PRINTCHR$141;CHR$129;"        G A M E    O V E
R"
 1530PRINT    CHR$134;"        You scored  ";SX
 1540 IF SX<=HIX(5) GOTO1660
 1550 VX=0
 1560 REPEAT VX=VX+1
 1570 IF SX>HIX(VX) GOTO 1600
 1580 UNTIL VX=5
 1590 GOTO 1650
 1600 FOR NS=5 TO VX STEP 1
 1610 HIX(NS)=HIX(NS-1):N$(NS)=N$(NS-1)
 1620 NEXT
 1630 PRINT    CHR$133;"         Enter your name"   CH
R$131;"       ) ";
 1640 *FX15
 1650 INPUT""N$(VX):HIX(VX)=SX
 1660 *FX15
 1670 PRINT    CHR$131;"        Press a key"
 1680 VDU23;8202;0;0;0;
 1690 A=GET
 1700 ENDPROC
```

Geography down-under



Learn about Australian towns and cities in Andrew Bird's program from down-under

If you want to brush up your geography then this is the program for you

This is a game which enables you to test your knowledge of the locations of various towns and cities in Australia and learn as you go along

Educational programs are in short supply so try this one out You ll find that you can really enjoy it and achieve something at the same time

How it works
1-7 set caps lock, keyboard beep etc
10-40 data for map and town position
100-150 set up arrays
200-400 menu
1000-1200 show routine
2000-2110 locate routine
3000-3250 test routine
5000-5010 draw map and print title
8000-8020 data for town names
9000-9010 graphics X and
9500-9510 machine code routine
9000-9980 data check

Variables
Dim t$ town names
Dim x,y coastline co-ordinates
Dim a,b town co-ordinates
data Z$ used for reading data
aa,bb code co-ordinates of dot you manoeuvre
ad,bd difference between your guess and correct co-ordinates
s$ score display
l$ town to locate
speed speed of display
nu number of towns in test
town random town
sc score
code starting address of machine code routine
ink ink colour of town displayed
tot used in data check
f general purpose loop

```
   1 REM  Australian Towns                  By A.G.Bird 1
984
   3 PRINT AT 10,10; INK 0;"PLEASE WAIT"
   4 POKE 23658,8: POKE 23609,50
   5 DIM x(93): DIM y(93)
   6 DIM t$(30,12): DIM a(30): DIM b(30)
   7 LET code=30000: LET a$=""
   9 REM  Data to draw map
  10 DATA 0,5,4,4,0,2,0,14,0,5,0,0,1,-9,-6,-8,-8,-6,-4,
-1,-4,-11,-4,1,-3,-4,1,-1,-2,-3,5,-10,-8,-10,-20,-4,-15
,-8,-8,-3,-1,2,-1,-5,2,-8,1,5,-7,3,-1,6,5,2,15,6,2,3,2,
-2,2,3,1,1,0,2,0,4,0,5,5,-1,3,2,3,-2,2,2,0,6,6,-4,1,10,
11,1,-7,10,6,4,-1,5,1
  20 DATA 1,-10,1,-4,-12,-2,-8,-12,-6,-1,-6,-9,-16,-20,
-4, 19,1,-6,4,3,-4,5,4,2,6,0,3,4,-5,0,13,-11,12,4,-6,-7
,-2,-8,0,3,3,1,9,6,9,12,3,-5,12,11,2,3,5,-1,7,8,0,-5,3,
2,2,-2,6,0,2,-1,3,0,3,0,-3,-4,3,0,-3,5,1,4,3,3,0,3,2,-4
,0,-3,-11,-14,0,10,6,16,0
  29 REM Data for town position
  30 DATA 108,104,252,94,250,220,223,220,157,122,93,200
,89,100,211,236,241,204,93,106,98,243,237,245,246,225,2
10,236,100,144
  40 DATA 33,29,61,34,75,27,72,49,143,110,40,15,59,20,1
7,52,37,117,43,45,100,83,34,42,62,106,94,32,53,128
  99 REM  DIMention Arrays
 100 RESTORE 10: FOR f=1 TO 93: READ data: LET x(f)=dat
a: NEXT f
 110 RESTORE 20: FOR f=1 TO 93: READ data: LET y(f)=dat
a: NEXT f
 120 RESTORE 30: FOR f=1 TO 30: READ data: LET a(f)=dat
a: NEXT f
 130 RESTORE 40: FOR f=1 TO 30: READ data: LET b(f)=dat
a: NEXT f
 140 FOR f=1 TO 30: READ z$: LET t$(f)=z$: NEXT f
 150 GO SUB 9000
 199 REM  Title & Menu
 200 BORDER 6: PAPER 6: INK 6: CLS : POKE code+1,0
 210 PRINT AT 8,11;"AUSTRALIAN";AT 10,9;"TOWNS & CITIES
";AT 12,10;"BY  A.G.BIRD"
 220 PLOT 120,168: FOR f=1 TO 93: DRAW x(f),y(f): NEXT
f
 230 PRINT AT 21,2; INVERSE 1;" Press any key to contin
ue "
 240 RANDOMIZE USR code: BEEP .01,50: PAUSE 0
 250 FOR f=0 TO 12 STEP .5: PRINT AT f,9;"
": NEXT f
 260 FOR f=0 TO 6: POKE code+1,f: RANDOMIZE USR code: B
EEP .01,f+40: NEXT f
 270 FOR f=6 TO 0 STEP -1: POKE code+1,f: RANDOMIZE USR
 code: BEEP .01,f+60: NEXT f
 280 PRINT AT 7,12; INK 1;"OPTIONS.";AT 9,12;"1 Show";A
T 11,12;"2 Locate";AT 13,12;"3 Test"
 300 PRINT AT 21,2; INK 3; INVERSE 1;"      Press  1, 2,
 or 3.      "
 370 FOR f=1 TO 50: NEXT f
 380 IF INKEY$="" THEN  GO TO 370
 390 IF PEEK 23560<49 OR PEEK 23560>51 THEN  BEEP .5,-3
0: GO TO 260
 400 GO SUB 1000*(PEEK 23560-48)
 999 REM  Show routine
1000 BORDER 7: PAPER 7: INK 7: CLS
1010 PRINT  INK 0;"1. SHOW"   "Please INPUT Speed at wh
ich you" "wish to be shown Towns & Cities."
1020 PRINT AT 9,10; INK 0;"1 Very slow";AT 11,10;"2 Slo
w";AT 13,10;"3 Medium";AT 15,10;"4 Fast";AT 17,10;"5 Ve
ry fast"
1030 FOR f=1 TO 200: NEXT f: INPUT speed
1040 FOR f=1 TO 200: NEXT f
1050 CLS : GO SUB 5010: POKE code+1,1: RANDOMIZE USR co
de
1060 LET ink=2: FOR s=1 TO 30
1070 PRINT AT 2*ink-4,0; INK ink;t$(s)
1080 CIRCLE  INK ink;a(s),b(s),1.5
1090 BEEP .01,50: FOR f=1 TO 800-speed*150: NEXT f
1100 LET ink=ink+1: IF ink>4 THEN  LET ink=2
1110 IF s=30 THEN  GO TO 1200
1120 IF s/3=INT (s/3) THEN  CLS : GO SUB 5010: RANDOMIZ
E USR code
1130 NEXT s
1140 PLOT 7,31: DRAW 42,0: DRAW 0,42: DRAW -42,0: DRAW
0,-42
1200 FOR f=1 TO 200: NEXT f: GO TO 200
1999 REM  Locate routine
2000 BORDER 4: PAPER 4: INK 4: CLS
2010 PRINT  INK 0;"2. LOCATE"   "Please INPUT the name
of the"  "Town or City you wish the"  "computer to loca
te."
2020 FOR f=1 TO 200: NEXT f
2030 INPUT l$: CLS
2040 GO SUB 5000: POKE code+1,0: RANDOMIZE USR code
2050 FOR f=1 TO 30: IF l$=t$(f,1 TO LEN l$) THEN  GO TO
 2080
2060 NEXT f
2070 PRINT AT 11,0; INK 0;"Sorry..."  "But I do"  "not
have"  "that town"  "in my"  "memory.": FOR f=1 TO 300:
 NEXT f: GO TO 2000
2080 PRINT AT 7,0; INK 7;t$(f): CIRCLE  INK 7;a(f),b(f)
,1.5: FOR f=1 TO 200: NEXT f
2090 PRINT AT 15,0; INK 0;"Press  1 "  "to locate"  "an
```

PROGRAM

```
ether"  "town or  u  to quit."; PAUSE 0
2100 IF INKEY$="L" THEN  GO TO 2000
2110 GO TO 200
2999 REM  Test routine
3000 BORDER 1: PAPER 1: INK 1: CLS : LET sc=0
3010 PRINT  INK 7;"3 TEST"  "How many towns & cities d
o you"  "want to be tested on ?( 1 - 30 )"
3020 FOR f=1 TO 200: NEXT f: INPUT test
3030 IF test>30 OR test<0 THEN  GO TO 3020
3040 CLS : PRINT  INK 7;"3 TEST" ' "You will be tested
on ";test;" towns"  "and cities."  "Move the dot around
 the map"  "using keys 5,6,7,& 8  When you"  "think its
 in the correct place"  "press  Break Space ."
3050 PRINT AT 21,2; INK 6;"Press any key to continue.":
 PAUSE 0
3060 FOR t=1 TO test: CLS
3070 LET aa=170: LET bb=90
3080 RANDOMIZE
3090 LET town=INT (RND*30)+1
3100 GO SUB 5000: POKE code+1,7: RANDOMIZE USR code
3110 PRINT AT 19,0; INK 6;"score";AT 21,0; BRIGHT 1;s$
3120 PRINT AT 6,0; INK 6;"Where is  . " t$(town)
3130 IF INKEY$=" " THEN  CIRCLE  INK 6;aa,bb,3: BEEP .2
,30: GO TO 3200
3140 LET aa=aa+2*(INKEY$="8" AND aa<255)-2*(INKEY$="5"
AND aa>30)
3150 LET bb=bb+2*(INKEY$="7" AND bb<160)-2*(INKEY$="6"
AND bb>8)
3160 PLOT  INK 7;aa,bb
3170 BEEP .01,aa/20: BEEP .01,bb/30
3180 PLOT  OVER 1;aa,bb
3190 GO TO 3130
3200 IF a(town)>aa THEN  LET ad=a(town)-aa: GO TO 3220
3210 LET ad=aa-a(town)
3220 IF b(town)>bb THEN  LET bd=b(town)-bb: GO TO 3240
3230 LET bd=bb-b(town)
3240 IF ad>4 OR bd>4 THEN  PRINT AT 0,21; INK 3; FLASH
1;" W R O N G ": FOR f=50 TO 0 STEP -1: BEEP .01,f: NEX
T f: LET s$=s$+"v": GO TO 3270
3250 IF ad>1 OR bd>1 THEN  PRINT AT 0,18; INK 7;"You we
re close": FOR f=1 TO 30: BEEP .01,RND*f/3: NEXT f: LET
 s$=s$+" ": GO TO 3270
3260 PRINT AT 0,17; INK 6; FLASH 1;" C O R R E C T ": F
OR f=1 TO 50: BEEP .01,f: NEXT f: LET sc=sc+1: LET s$=s
$+" "
3270 CIRCLE  INK 6;a(town),b(town),1.5: PRINT AT 21,0;
INK 6; BRIGHT 1;s$: FOR f=1 TO 400: NEXT f: NEXT t
3280 FOR f=1 TO 200: NEXT f: CLS : PRINT  INK 7;"3 TEST
"   "At the end of your test you have"  "correctly loca
ted ";sc;" of the ";test;  "towns & cities set for you
by"  "the computer."
3290 PRINT AT 21,2; INK 6;"Press any key to continue":
PAUSE 0: CLS : GO TO 200
3999 STOP
4999 REM  Map & Title subroutine
5000 PRINT "Australian"  "Towns & Cities"  "By A.G.Bird
"
5010 PLOT 210,130: FOR f=1 TO 95: DRAW x(f),y(f): NEXT
f: RETURN
7999 REM  Data of town names
8000 DATA "ADELAIDE","ALBANY","BRISBANE","BUNBURY","BUN
DABERG","CANBERRA","CHARLEVILLE","COBAR","DARWIN","DERB
Y","FREMANTLE"
8010 DATA "GEELONG","GERALDTON","MEEKATHARRA","MELBOURN
E","NARRABRI","NEWCASTLE","NORMANTON","PERTH","PORT AUG
USTA"
8020 DATA "PORT HEDLAND","ROCKHAMPTON","SYDNEY","TAREE"
,"TOOWOOMBA","TOWNSVILLE","WINTON","WOLLONGONG","WOOMER
A","WYNDHAM"
8999 REM  Graphics
9000 RESTORE 9010: FOR g=65368 TO 65383: READ r: POKE g
,r: NEXT g
9010 DATA 0,0,1,2,4,136,80,32,0,0,0,60,40,16,00,60
9499 REM  M/Code routine
9500 RESTORE 9510: FOR m=code TO code+24: READ data: PO
KE m,data: NEXT m
9510 DATA 62,0,230,7,87,33,0,88,6,3,197,6,0,126,230,248
,170,119,35,16,248,193,16,242,201
9899 REM  Check data
9900 LET tot=0: FOR f=1 TO 93: LET tot=tot+x(f): NEXT f
9910 IF tot<>0 THEN  PRINT  INK 0;"ERROR IN DATA.  LINE
 10": STOP
9920 LET tot=0: FOR f=1 TO 93: LET tot=tot+y(f): NEXT f
9930 IF tot<>0 THEN  PRINT  INK 0; ERROR IN DATA.  LINE
 20": STOP
9940 LET tot=0: FOR f=1 TO 30: LET tot=tot+a(f): NEXT f
9950 IF tot<>5563 THEN  PRINT "ERROR IN DATA.  LINE 30"
: STOP
9960 LET tot=0: FOR f=1 TO 30: LET tot=tot+b(f): NEXT f
9970 IF tot<>1200 THEN  PRINT "ERROR IN DATA.  LINE 40"
: STOP
9980 RETURN
9999 SAVE "Australia" LINE 1
```

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PE without pain

If you like sport but don't want to tire yourself out then try some of these games — for the armchair athlete

Bruce Lee
CBM 64 £9.95

U S Gold, Unit 24, Tipton Trading Estate, Bloomfield Rd, Tipton, W Midlands DY4 9AH

If you're looking for kicks, here's just the game for you. Bruce Lee the master of the martial arts, has to pit his strength against that of the Ninja and the Green Yamo, kicking and chopping them as he makes his way to the fortress of the wizard

Between fights he has to jump up and collect the lanterns hanging from the ceiling, to open the doors between the 20 different chambers. As if that wasn't enough, there are also electric charges and various other traps

One unusual feature is that it can be played by one person against the computer or by two people, one as Bruce Lee and the other as the Green Yamo. The two players can opt to keep the same characters throughout the game, or swap sides each time Bruce takes a fall

With the single player option you go right back to the start at the beginning of each game, and working your way through the first few rooms to reach the more challenging ones which follow soon becomes rather tedious. It's an attractive game though, and deserves to be a success **M N.**

instructions	85%
graphics	90%
playability	90%
value for money	80%

★ ★ ★ ★

Match Day
Spectrum
£7.95

Ocean, Ocean Hse, 6 Central St, Manchester M2 5NS

Without doubt, Match Day is the football simulation we've all been waiting for on the Spectrum. The graphics are superb, with smooth movement, untroubled by the usual colour problems, and a first class image of the field in 3D. Even the ball is well represented, with its own shadow shown when kicked high

The game can be set up to suit you, from the colour of the players' strip, team names, degree of difficulty and type of competition to the controls to be used. This is where two socket joystick ports come into their own. The game can be configured so that you can play against a friend, instead of just the computer

All the features of a real game are here, dribbling, passing, receiving, a controllable goalie, throw-ins, corners, goal kicks, and of course, kick-off. You'll need to practice. Real skill is required here

The whole package is characterised by professionalism from the illustrations to the instructions. A real masterpiece, and a must for your collection even if rather expensive **D M.**

instructions	100%
graphics	100%
playability	100%
value for money	95%

★ ★ ★ ★ ★

Run For Gold
Spectrum

Hill MacGibbon, 92 Fleet St, London EC4Y 1DH

This preview copy came without instructions so I may have missed out some aspects! Featuring the same save to Microdrive options as previously reviewed games written by Fiveways, this is a simulation of running at an athletics meeting

Unlike the present crop of joystick-driven athletics game you don't have to 'drive' the feet. Here on level one you control energy use, and a quick start, whilst on level two you must steer your runner. This is very difficult, even with a joystick, and results in your colliding with other athletes or running off the track to instant disqualification! A series of menus set up the game with choice of level, length of race opponents, and joystick protocol

The graphics are superb. Enormous animated monochrome sprites show the runners in detail. You can switch to a map to see your position more clearly. The track, crowds and stands are all clearly shown — very impressive

Whilst the execution of this concept is immaculate, I didn't find playing it as intriguing as Yacht Race or Rally Driver from the same publisher. You may like it better **D M**

instructions	N/A
graphics	100%
playability	90%
value for money	70%

★ ★ ★ ★

The Open
Spectrum
£5.95

CCS, 14 Langton Way, London SE3 7TL

This is a simulation based on two real golf courses. You may choose competition or practice play and decide at the outset what part the wind will play in your game. Having done so, you start on your chosen course

You decide which of the 10 clubs to use. Their characteristics are detailed on the inlay, together with the problems which landing in the rough will cause. You then input the direction of shot in degrees. This isn't as easy as it sounds! The tee, fairway and green of the hole then appear

This caused problems, the ball was nearly invisible on the green shimmery screen. Now the hardest bit! You time the swing of the club by looking at a small animated figure. Get it wrong and you either hook or slice. It really does take practice. Should you land on the green, this appears in detail and the process starts again until you manage to hole the ball

Very cleverly done in BASIC but not exactly an action game unless you're a golf fanatic with a fairly clinical approach **D M**

instructions	75%
graphics	75%
playability	75%
value for money	100%

★ ★ ★ ★

American
Football
16/46K
Spectrum
£6.99

Softstone Limited

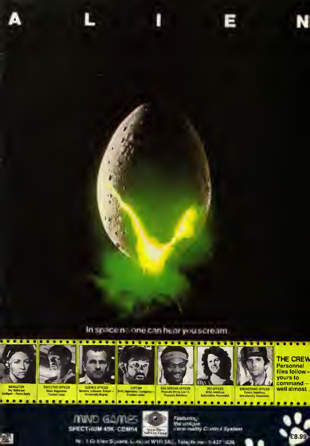
Before anyone gets too excited at the thought of an American Football game in 16K and 3D graphics this is not likely to be quite what you expect. It is a simulation game not a reaction game. You play the manager and the only way you can control the play is by skillful management of your side off the field. The graphics are crude, simple and inadequate

Unless I'm much mistaken part of the interest in American football is the play for distance towards the goal and not just the touchdowns. There is none of this at all, neither are there any kicked goals

The main thrust of the program is team management but you are only able to manipulate a couple of variables the composition of your squad and the players picked for the team. There are no specialist players, each one plays in any position. This makes it a poor simulation and I cannot really recommend it on any of the usual criteria. Someone must be able to do better than this even in 16k. **D C**

instructions	55%
graphics	35%
playability	80%
value for money	40%

★ ★



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Broken rule

I am writing in reply to Andy Clarke's lette (HCW 88) in which he complains about the high price of Commodore 64 software

All I can say to him is that when he bought his micro he broke the basic rule of buying a computer. As everyone knows you should look at the software first and then decide which computer you want within your price range. I bought a Spectrum because I realised that there was lots of very good software for it at a very reasonable price and lots of choice

He bought a Commodore so shouldn't complain about it after the event. He could have been sensible like me and got a Spectrum which is a brilliant machine and well worth the money I paid for it in terms of the hours of enjoyment that I have had out of it

Stop complaining Andy, you brought this problem on yourself

Paul Johnson, Glasgow

Sound off

I am writing to ask if anyone can help me with a problem I have with my TI 99/4A

The problem is that I cannot get the sound channel on my television for my TI. I can get a perfect picture with sound but it buzzes and crackles a lot

If the screen is cleared then I can play some music, but if I play music when the screen is a different colour, or if it is full of writing, then I cannot hear it at all

If anyone could help me I would be most grateful

Jim McLaren, Ayrshire

My brother!

I have been reading HCW now for a number of months and I am always interested in the letters page

My problem is a very simple one — I can't get my little brother away from my computer! He spends all his time playing games on it and won't let me anywhere near it. We end up arguing and fighting and then neither of us are allowed to use it

I'm really into programming and enjoy sitting in front of my micro for hours on end being creative or whatever. My brother just gets in the way, and all he's interested in is high scores or finishing adventures

I know this sounds like a problem for a women's magazine, but what do you suggest? He's ruling the sitting room at the moment and I'm relegated to my bedroom — and after all, it was my present in the first place

Nick Collett, Manchester

Well, this is the first time we've had a reader's letter like this! To preserve family harmony I suggest you involve your Mum in the dispute. Talk to her and tell her the problem, and she'll be able to work out a schedule so that you can both use it — and still get your homework done. Any other suggestions readers?

Manic cheating

Did you know that on Manic Miner for the 48K Spectrum you can have endless lives and go on to whichever stage you like. This is how I do it

MERGE "" Now it should load. Put OK then break into it and PUT 25 POKE 3 51360. Put RUN then ENTER and start the tape again. When it has loaded press ENTER then type 6031769 and a little boot should appear at the bottom

These numbers will get you on to different stages

64	Wackys
63	Toilets
62	Ducks
61	Penguins
65	Warehouse
632	Kangaroos
621	Works
643	Refinery
6432	Bank
6321	Kong Beast

You must press them all at once. For example, with the ducks you would have to press 6 and 2 at the same time

Bruce Hyde, Middleton St George

Wulf addict

Thank you for your great magazine — it really fills in the weeks

I am just putting pen to paper to tell you that Sabre Wulf for the Spectrum has now been skilfully converted for the BBC. The graphics are exactly like the Spectrum, and the number of rooms is still 256

The graphics open new doors to the Beeb's potential, and the colour, variety and smooth animation make this game by Ultimate a definite must

Please could you print my best score, as I would like to see how mine rates with other BBC Sabre Wulf novices. The score is 99% — 251,385 — with five lives left

Also my rating on Acornsoft's Elite is halfway between dangerous and deadly with 29000 credits. I may have found an annoying bug in this game

When in hyperspace, the game hyperspaces twice and I am left in a black abyss with several Thargon battle ships which readily blasted my ship away. On pressing escape, for escape capsule, the ship explodes and you must start again from your former position

Apart from this rare bug the game is great and really exciting. The bug only happens about one time in 50 hyperspaces

Keep up the good work

David Brown, Belfast

OAP micro fun

I have a 16K Spectrum, with Cheetah up-grade add-on to 48K. As a senior citizen it has given me hundreds of hours of pleasure and no trouble over some 18 months constant use. Even in hospital on a couple of occasions, the staff used to let me use the TV in the day room when the rest of the patients were tucked up in bed for the night

I repaid them by doing their biorhythms and plotting them off the screen through temperature charts

Now to the nitty gritty of my letter. Thanks for dropping the very small print of programs. The number of wasted hours I've had de-bugging a full stop, comma and semi colons etc.

Secondly, what I feel is a helpful suggestion to your readers and compositors alike: when you publish names of competition winners, and also space saving, why not just give name and post code?

I have seen J Hughes, Manchester and waited in vain for the post to deliver — in vain, foolish man — there must be hundreds of J Hughes in Manchester who get the entries correct, but there is only one J Hughes at post code M30 5DZ in Great Britain

J Hughes, Manchester

P S Thanks for a first rate magazine at a fair price

Sorry, we will be continuing to publish competition winners' town of origin — to stop the poor typists' eyes crossing! But if you think you've won a competition and haven't yet had your prize, write in giving details

Adult enthusiast

I am one of the older generation and have discovered a new interest with my VIC 20 computer.

I suffer from arthritis in my hands and have had to give up my hobbies of knitting, crochet and hand crafts. I found time hanging heavily, with little to occupy my leisure hours except reading. But now all that has changed and I am learning a new language called BASIC

I can type with one finger and I get great satisfaction from seeing the programs I type in coming to life

The depression of inactivity has lifted and I am even losing weight because I am so engrossed in the computer I am not nibbling away between meals

I must confess I started buying HCW mainly for the listings but now I am anxious to learn as much as I can about my particular computer, and maybe one day write my own programs

I like HCW for your articles on the VIC, especially from other readers

Jenny Robison, Motherwell

Help!

I am a regular buyer of your magazine and thoroughly enjoy it

I would like to ask if anyone can help me with a loading problem on my 16K ZX81. I have bought a games cassette and this loads perfectly but when I try to load my own programs off a cassette the screen changes normally but the thick black and white bands do not come up

Could someone please help me?

Neil Mepherson, Dunbartonshire

Bug-free

Your review of Country Cottages (HCW 90) implies there is a bug if you go above £100,000

This is not so. Any target value can be specified. The game has been tested and debugged on over 20 people over 18 months!

I suggest your reviewer has been watching the properties value whereas the object of the game is for total assets to reach the target value. This is clearly stated in the instructions

It seems he played entirely by himself, which is absurd. The game is designed especially for two players — and a lot of the fun is in the *live* bidding! Of course he wouldn't have much fun on his own

Brian James (author), Aberdeen

Going back in time

I am writing to see if any TI owners can help me

In HCW 29 there was a program *for* TI called Dig for a Fortune in Gems. I know this is a long time ago but as the children have just started using the machine they decided to go through all the old HCW magazines and type some games in, but on the one mentioned for some reason it will not register that three gems have been picked up, only two

Not being very good at de-bugging, do you think anyone out there might know the answer?

Mr J M Pankhurst, Devizes

Send your letters to Letters Home Computing Weekly No 1 Golden Square London W1R 3AB. Don't forget to name your computer — the best letter could win £5 worth of software. Got a problem with your micro? We'll soon be starting a queries page so send your technical questions to Queries at the above address

TOP 20 *Compiled by Gallup* Software

HCW is proud to present the Gallup software chart — the one to believe in. Gallup's reputation as a credible market research company is second to none. This software study is carried out nationwide in both independent and chain stores, on a weekly basis. This is chart to watch out for — the one you know you can trust.

Week Ending December 31, 1984

LAST WEEK	MOVE	THIS WEEK	TITLE	PUBLISHER	SPECTRUM	COM 64	BBC	ELECTRON	VIC 20	AMSTRAD	ATARI	OTHERS
1	▲	1	Ghostbusters	Activision	●	●						
3	▼	2	Daley Thompson's Decathlon	Ocean	●	●						
2	▼	3	Match Day	Ocean	●							
12	▲	4	Elite	Acornsoft			●	●		●		
27	▲	5	Hunchback	Ocean	●	●	●	●	●			
5	▼	6	Booty	Firebird	●	●						
11	▲	7	Knight Lore	Ultimate	●							
21	▲	8	Manic Miner	Software Projects	●	●	●			●		●
4	▼	9	Air Wolf	Elite	●							
26	▲	10	Starstrike 3D	Realtime Software	●							
8	▼	11	Beach-Head	U S Gold	●	●						
15	▲	12	Pyjamara	Mikro Gen	●	●				●		
19	▲	13	Hunchback 2	Ocean	●	●						
6	▼	14	Skooldaze	Micro Sphere	●	●	●					
10	▼	15	Football Manager	Addictive Games	●	●	●			●		●
—	R/E	16	Blue Max	U S Gold	●	●						●
17	●	17	Steve Davis Snooker	CDS	●					●		
49	▲	18	Kong Strikes Back	Ocean	●	●						
16	▼	19	Underwurlde	Ultimate	●							
9	▼	20	Combat Lynx	Durell	●	●				●		

SPECTRUM

Top Ten

1	**Ghostbusters** Activision
2	**Match Day** Ocean
3	**Daley Thompson's Decathlon** Ocean
4	**Knight Lore** Ultimate
5	**Airwolf** Elite
6	**Starstrike 3D** Realtime Software
7	**Booty** Firebird
8	**Skooldaze** Microsphere
9	**Underwurlde** Ultimate
10	**Beach-Head** U S Gold

BBC

Top Ten

1	**Elite** Acornsoft
2	**Sabre Wulf** Ultimate
3	**Mine Shaft** Durell
4	**Grand Prix 3D** Software Invasion
5	**Manic Miner** Software Projects
6	**Scrabble** Leisure Genius
7	**Frak!** Aardvark
8	**Twin Kingdom Valley** Bug Byte
9	**Mr EE** Micropower
10	**Fortress** Pace

COMMODORE

Top Ten

1	**Ghostbusters** Activision
2	**Daley Thompson's Decathlon** Ocean
3	**Staff of Karnath** Ultimate
4	**Raid over Moscow** US Gold
5	**International Football** Commodore
6	**Kong Strikes Back** Ocean
7	**Football Manager** Addictive Games
8	**Hunchback 2** Ocean
9	**Select 1** Computer Records
10	**Beach Head** U S Gold

Compiled by Gallup for the industry's weekly trade magazine, Computer and Software Retailing
For details contact John Sorrenti, Computer and Software Retailing, No. 1 Golden Square, London W1R 3AB. 01 437 0626

Zap, zow, bang

Here are a few exciting games to keep you on your toes, there's action for everyone

Pitfall II Spectrum £8.99

Activision, 15 Harley House,
Marylebone Rd, London NW1 5HE

Pitfall II doesn't measure up to the pictures on the package. And at this price, it should. It's an underground exploration, like Manic Miner, but with an attempt to make the surroundings look realistic and not so many things to avoid. Each time you collide with one, you lose points and are transported back to the site of the last 'healing cross' you discovered.

The character set used is the standard Sinclair job, which looks very ordinary, and the animation and construction of the figures is very crude. The one saving grace is the rather interesting rendition of a moving underground sea and Pitfall Harry swimming in it. When nobbled by a creature, he also whizzes back through all the locations back to the cross, which is fun if frustrating!

To be fair, this is a good concept, but again, as it's a conversion, the transition hasn't been kind to it. It would have been good to see what Ultimate or Ocean would have made of it, but in its present low state of sophistication it should only command a retail price of £1.99. **D.M.**

instructions	100%
graphics	50%
playability	100%
value for money	25%

★ ★ ★

Pure Flash Oric 1 / Atmos 48K £8.50

No Man's Land, 110 bis, av du General Leclerc — 93500 Pantin, France

Fire Flash is a standard clone of Defenders. The object is to defend a fuel depot from enemy vessels trying to steal your fuel. They get nasty when you try to stop them, and fire rockets, or bump into you deliberately to destroy you (after all, there are more of them than you!)

You have three lives and a radar display to help you. If you succeed in destroying one wave of aliens, your reward is to get another wave of space ships, twice in number.

The program uses the sound chip to excellent advantage and colours and screen display are reasonable. The choice of control keys is bizarre. For example, the up cursor key is used to lower your space ship!

It is also too easy to cheat. One option is to pass into hyperspace. By keeping the appropriate key depressed you can stay in hyperspae and the enemy can't touch you. You can come out, shoot an enemy and split back before a shot is returned. **D.N.**

instructions	50%
graphics	70%
playability	70%
value for money	60%

★ ★ ★

Mr Freeze Spectrum £2.50

Firebird, Wellington Hse, Upper St Martin's Lane, London WC2H 9DL

I'm sure we've all found strange things in the fridge, but never flying food, guardian robots, ladders between compartments and lasers.

As Mr Freeze, your objective is to dodge the flying food and robots etc. and use your flame thrower to defrost all six compartments. Whenever you bump into one of the hazards or fall too far, you turn into an ice cube and lose one of your six lives.

The first compartment has an astonishing hazard — an intelligent flying chicken leg. Whenever you're racing towards it and let loose with the flame thrower, it manages to stop its movement just out of range. However, if you turn your back it goes for you. Enough to put you off Kentucky fried chicken for life.

The blues and whites used for the graphics give a good impression of cold and the animation of the robots and the other hazards is good. The laser is deadly accurate and this contributes to the high degree of skill required to complete your mission.

In addition to manual dexterity, you'll have to use brainpower, particularly to solve the sixth compartment, which initially you might think is impossible. **M.B.**

instructions	85%
graphics	88%
playability	85%
value for money	90%

★ ★ ★ ★

Mars Mine Lander TI-99/4A £5

H Taylor, distributed by Stainless, 10 Alstone Rd, Stockport

This is a sophisticated sort of Lunar Lander, but it does have a certain appeal. Life begins at the top of the screen, where five modules sit waiting to drop down under your control on to five pads at the bottom.

Between your modules and their targets are randomly placed mines which you must avoid. You can shoot them down under certain circumstances, mostly from underneath, with your laser. As each module is successfully landed, so further mines appear chattering up the screen. You have a limited amount of fuel, and all manoeuvres use up vast quantities of it. If you land all five successfully, you can refuel by landing on a small mobile platform, although you are permitted only one attempt at this.

In an extreme emergency, which is a euphemism for facing total failure, you can use emergency boosters to move upwards, but as usual there is a penalty: it uses up even more fuel.

Graphics are moderately good and the game has past the right degree of difficulty to make it reasonably challenging. **P.B.**

instructions	75%
graphics	75%
playability	80%
value for money	70%

★ ★ ★ ★

Crazy Caverns 16K Spectrum £2.50

Firebird, Wellington Hse, Upper St Martin's Lane, London WC2H 9DL.

It's difficult to describe the plot for Crazy Caverns but I suppose it could appeal to compulsive eaters, as a substitute for the real thing.

In the centre of the cavern is a chomping, disembodied mouth and above it, a pair of rolling eyes. Your aim is to operate the Cubey Crammer, push the crunchy cubes twixt the big rubbery lips and thus feed the craving craw. Cramming the crunchy cubes is quickly complicated, since collision with a crazy crasher crushes your cubey crammer to a crisp.

The crazy crashers are canary like creatures careering round the cavern on erratic courses. Cavern completion is achieved when all the crunchy cubes are crammed and you can then continue on to cavern two, where the cave configuration causes more consternation.

You win the final accolade when all 10 caverns have been emptied of cubes, a task which is likely to take considerable practice, as a high degree of manual skill is required. It's a wacky plot which should appeal to younger computer buffs who'll like the pocket money price. But I think it will find less favour with the game sophisticates. **M.B.**

instructions	80%
graphics	80%
playability	85%
value for money	90%

★ ★ ★ ★

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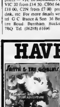

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